



Surrey County Council.

ANNUAL REPORT,

1899,

OF THE

MEDICAL OFFICERS OF HEALTH

OF THE

ADMINISTRATIVE COUNTY OF SURREY.

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I.—INTRODUCTORY LETTER.

MR. CHAIRMAN, MY LORDS AND GENTLEMEN,

I beg to submit herewith the usual Report and Summary for the past year.

This is the first occasion on which I have been able to present my Annual Report, practically complete and in printed form, to the April meeting of the Sanitary Committee.

The Report takes account of 34 Administrative Areas under different Corporations and District Councils; it concerns a population of half a million, and relates to the work of no less than 79 officials (including those who work under or in close association with the Medical Officers), besides requiring frequent references to Registrars of Births and Deaths and many others in

its preparation. It should also be mentioned that during the period of its preparation several Medical Officers were much hampered by duties connected with a severe epidemic of Influenza. Moreover, two Medical Officers—viz., Col. Coleman and Col. Lake, have been called off for military service, the latter having already left for South Africa, while Dr. Walcot, of Camberley, a very able young colleague, is just leaving as Medical Officer to the “Rough Riders” of Imperial Yeomanry.

It speaks well for the spirit in which the Surrey Medical Officers work for the County as a whole that under these circumstances this joint Report is both complete and punctual. I am confident that in no County in England could better results be achieved under existing conditions. I hope, therefore, that will be considered satisfactory by the Council.

Your obedient Servant,

E. C. SEATON, M.D.,

County Medical Officer of Health.

April 10th, 1900.

*To the Council of the
Administrative County of Surrey.*

II.—COUNTY SANITARY ADMINISTRATION.

The subjects on which the County Medical Officer of Health has been called upon to give special information, advice, evidence and other assistance is summed up as follows:—

(a) *Water Supplies*.—River Wandle Protection Bill; River Wey Watershed with Messrs. Taylor, Sons and Santo Crimp; Woking Water Bill; Typhoid prevalence in the area of the Metropolitan Companies; Sanitary Institute Conference; Kingston constant Water Supply; Dorking Water Supply; Subsoil contamination in relation to Sources of Water Supply at Lympsfeld, Sutton and Godalming; Reports on Farnham and East Surrey Gathering Grounds; Analyses, circulation of Copies; Richmond Corporation Supply; Conservation of Local Water Supplies; Correspondence with County Councils Association; Sutton Water Bill; Preparation of detailed Maps of East Surrey and Sutton Companies' Water Supplies.

(b) *Sewage Disposal*.—Visit to and Report on Works at Southampton with the Chairman of the Sanitary Committee; Visit to and Report on the following Sewage Disposal Areas and Works in the County:—

A.—SEWAGE FARMS.

Beddington, Epsom, Godalming, Camberley.

B.—SEWAGE DISPOSAL WORKS AND FARMS.

Weybridge, Reigate, Esher, Guildford, Farnham, Ripley Sewage Disposal Area (1 and 2), Shere, Bletchingley, Horley.

C.—SEWAGE WORKS.

Dorking, Cranleigh, Malden, Cheam, Tolworth, Molesey, Wimbledon, Sutton, Merton, Richmond, Kingston.

Sewerage of Caterham; Investigation and Report of Special Complaints of Farnham Sewage Farm; Bletchingley Disposal

Area; Holmwood, questions of Sewage Disposal by Sewerage Systems or otherwise, involving long correspondence with a Local Committee. Special Inquiry and Report as to Kingston Sewage Works in August.

(c) *River Conservancy*.—Conference, with Officials of the Thames Conservancy Board; Interview, with Officials at Farnham and Frimley as to cleansing of the Blackwater; Carshalton, Mr. Frost's complaint as to the pollution of the Wandle; visiting and reporting with Dr. Davison on the condition of the Beverley Brook since the alterations at the Worcester Park Sewage Works.

(d) *Rainfall Returns*.—Correspondence and Conferences with Mr. Campbell Bayard and a number of other gentlemen as to collating and issuing returns along with the Monthly Zymotic Return.

(e) *Congresses and Conferences* of Medical Officers of Health at Stratford, College of Physicians in London, British Medical Association at Portsmouth, Sanitary Institute at Southampton, as to the nomenclature of Epidemic Diarrhoea or Zymotic Enteritis, the working of the new Vaccination Act, and the prevention of Consumption and Tuberculosis.

(f) *Consultations* with Medical Officers and others as to outbreaks of preventable Zymotic diseases at Wimbledon, Kingston, Holmwood, Dorking, Egham, and Malden; also as to disinfection of a large college and a hospital at Egham, and as to the general rules for disinfection of houses, in which cases of infectious diseases have been notified, such as are suitable to the Farnham Rural and other similar districts; also as to Isolation Hospitals at Redhill, Wimbledon, and Farnham, and the pressing need for accommodation at Dorking.

Conferences with District Officials as to very serious nuisances from

(1) Farncombe (Guildford R. D.) next Godalming, from houses being allowed to be erected without proper water supply or drainage provision.

(2) At Little Heath (Cook's Cross) Brickfield (Epsom R. D.), from a mountain of noxious filth close to dwellings.

(g) *Conferences* with Chairman of the Council, Chairman of the Sanitary Committee, and others as to numerous matters, including the Housing of the Working Classes at Mitcham; also as to the preparation and issue of Annual Reports of Medical Officers of Health by District Councils.

LOCAL GOVERNMENT BOARD INQUIRIES.

In those counties (14 in number) in which the County Councils are carrying out the intentions of the Local Government Act of 1888, close attention is now given to the various schemes promoted by the Local Sanitary Authorities, which necessitate application to and inquiry by the Local Government Board, for the purpose of obtaining Provisional Orders or Loans. The County as a whole is deeply concerned in these schemes, not only because they entail a large but often necessary expenditure, but also because they permanently affect the sanitary condition of the County.

It is for these reasons that the County Medical Officer of Health attends these Inquiries whenever he thinks that his

presence will be useful. This is generally the case, for besides having local knowledge combined with a large experience of the practical working of Sewerage and Sewage Disposal Schemes, he is also well acquainted with the policy of the Council in the complex questions that often arise in the consideration of such Schemes.

The following is a list of the Inquiries which have taken place during 1899, and at almost all of which the County Council was represented by the County Medical Officer of Health, who acted in accordance with the Standing Order regulating his attendance at such inquiries. The subject of the Inquiry, with a note thereon, is here briefly stated:—

1. NUTFIELD, Feb. 3. Col. Langton Coke, M.I.C.E.—
Provisional Order to acquire Land for Sewage Disposal purposes at a suitable elevation, not too close to a stream. Some modifications of this scheme were suggested on inspection with the County Medical Officer of Health, and communicated to the Authorities concerned.
2. CRANLEIGH, Feb. 28. Col. Slacke, R.E.—Provisional Order to acquire Land, at a distance from the Village. Gravitation scheme, Septic tank and contact bed with land treatment. Outfall close to water-course. Land suitable and area amply sufficient.
3. WOKING, March 2 Col. Slacke, R.E.—Additional Loan of £17,000 for the Sewerage Works, now approaching completion.
4. CROYDON, March 28. G. W. Wilcocks, Esq., M.I.C.E., and S. W. Wheaton, Esq., M.D.—For sanction to

borrow £33,000 for the purchase of certain Land at Stroud Green, and the construction thereon of Water Works. This Inquiry affects the County only so far as it is connected with the alternative scheme whereby the Wandle watershed was considered to be threatened.

5. LIMPSFIELD AND OXTED. March 30. G. W. Wilcocks, Esq., M.I.C.E.—Apportionment of Expenses, £11,312, for purposes of Sewerage and Sewage Disposal.
6. WIMBLEDON, May 1. Col. Marsh, R.E.—Earlsfield Sewage Works. Loan of £1,000 for a ballast filter for treatment of storm water, in place of the old storm-water filter of 1876. The County Medical Officer of Health gave evidence, with Mr. Cooper, the Engineer for the District Council, in support of this application.
7. EPSOM, May 5. Col. Slacke, R.E.—Loan of £1,600 for Works intended to intercept surface, rain and pond water from the sewerage system, and thus diminish the volume of water to be dealt with at the outfall — *viz.*, the Epsom Broad Irrigation Farm. The County Medical Officer of Health gave evidence as to need of improvements.
8. SHERE AND GOMSHALL, May 9 (date of County Council Meeting). F. H. Tulloch, Esq., M.I.C.E.—Loan of £1,700 for Sewerage Work for the village of Gomshall. Subject previously reported on to the Council.

9. BRAMLEY, June 13. Charles Perrin, Esq., M.I.C.E.—Loan of £4,000 for Works of Sewerage and Sewage Disposal (in combination with Wonersh). The “disposal,” as at Cranleigh, to be carried out on the Septic Tank Syndicate’s scheme, with an outfall close to a water-course.
10. ESHER AND DITTONS, June 23. F. H. Tulloch, Esq., M.I.C.E.—Loan of £2,126 for reconstruction of parts of the Sewerage System laid down ten years before, so as to keep the subsoil water out of the sewers, and thus diminish the disproportionate volume of sewage (very diluted) which has to be pumped up for treatment at the outfall. The scheme was examined in detail by the Inspector with the C.M.O.H.
11. CROYDON AND WIMBLEDON JOINT HOSPITAL DISTRICT, July 31. Dr. Wheaton.—Loan of £30,000 for purchase of land at North Cheam, between Worcester Park and Sutton, and erection of hospital thereon. Interim Report of C.M.O.H., for Chairman of the Sanitary Committee, Aug. 5, 1899. Copy before the Committee on Oct. 24.
12. MALDEN AND COOMBE U.D.C., August 18. W. O. E. Meade-King, Esq., M.I.C.E.—Loan of £7,000 for improvements of existing works of sewage disposal, as to the need of which the County Medical Officer of Health gave evidence.
13. GUILDFORD R.D.C., Aug. 29. W. O. E. Meade-King Esq., M.I.C.E.—Loan of £19,500 for purposes of Sewerage and Sewage Disposal for Stoke-next

Guildford. Site visited by Inspector with County Medical Officer of Health and Engineer for the scheme. Considered favourable, and if works carried out efficiently, no reason why scheme should not be successful. Suggestion made on the spot by County Medical Officer of Health to avoid, if possible, long underground effluent pipe or channel.

14 & 15. EPSOM R.D.C., Sept. 12. E. A. Sandford-Fawcett, Esq., A.M.I.C.E. — Loan, £4,700, for purposes of Sewerage and Sewage Disposal for part of Parish of Cheam, near Belmont. SUTTON U.D.C.— Loan, £1,050, for Works of Sewerage. Both Inquiries related to the substitution of an efficient system of sewers for the soak-away cesspits in the area of the Sutton Water Supply. The County Medical Officer of Health attended and gave evidence in accordance with the reports already published by the Committee, urging the importance attached to the question by the Surrey County Council.

16. WALTON-ON-THAMES U.D.C., Sept. 15. E. A. Sandford-Fawcett, Esq., A.M.I.C.E. — Loan, £16,000, for purposes of Sewerage and Sewage disposal. Inquiries related solely to the works, &c., of the scheme, now in course of construction, which has been fully discussed.

17. HAMBLETON R.D.C., Sept. 25. Robert H. Bicknell, Esq. M.I.C.E.—For approval of constitution of special drainage district for Wonersh, and to borrow £3,500 for purposes of Sewerage and Sewage Disposal for

such district. The County Medical Officer of Health had gone away on leave when this notice reached him. He wrote to the Inspector (having furnished him already with a copy of the special report on the working of sewage disposal schemes in Surrey) bringing to his special notice the special questions involved in rural districts.

18. CROYDON, Nov. 8. W. O. E. Meade-King, Esq., M.I.C.E.—Loans of £921, £612, £2,298, £84, and £1,612, for purposes of Sewerage and Sewage Disposal for the Parishes of Beddington, Merton, Mitcham, Morden, and the Hamlet of Wallington.
19. WIMBLEDON, Nov. 22. Colonel Marsh, R.E.—Loan of £7,280 for Works of Sewerage, Street Improvements, and Public Baths.
20. GODSTONE R.D.C., Dec. 14. Colonel Marsh, R.E.—Loan of £8,000 for purposes of Sewerage and Sewage Disposal for the Parish of Godstone. The County Medical Officer of Health gave evidence at this Inquiry as to the need of some better system for the Village than that now existing. The scheme is by Mr. Fairbank, C.E., and the Septic Tank Syndicate.
21. DORKING, Dec. 15. Colonel Marsh, R.E.—For the approval of the constitution of a special drainage district to comprise the South Holmwood part of the Ward of the Parish of Dorking Rural, and for sanction to borrow £5,035 for the purposes of Sewerage and Sewage disposal for such drainage district. This was a very long Inquiry, involving the whole question of

sewering sparsely populated rural districts. It was adjourned till 1900.

LOCAL GOVERNMENT ACT, 1888.

Inquiry by the County Council of the Administrative County of Surrey into a proposal made to them by the Urban District Council of Dorking, that the boundary of the area of the said Urban District be altered so that it should comprise the whole of the Parishes of Dorking and Dorking Rural, held at the Petty Sessional Court House, Dorking, on Saturday, March 18th, 1899, attended by the County Medical Officer of Health, for the purpose of advising on questions of water supply, sewerage, and sanitary administration generally, which were incidentally raised in the course of the Inquiry.

CHANGES IN APPOINTMENTS.

The only appointment of any importance that has undergone change in 1899, is that of Surveyor and Inspector (combined) for the District of Guildford Rural. Mr. Dewhirst has obtained a larger appointment at Chelmsford, and has been succeeded by Mr. Anstee.

THE WORK OF SANITARY INSPECTORS.

The County Medical Officer of Health desires to take this opportunity of calling attention once more to the disadvantage frequently arising from the combination of the two offices of Surveyor and Sanitary Inspector in one appointment. The work of nuisance inspection almost invariably suffers by this arrangement. In most of the large Urban Districts of the County—Surbiton to wit—the appointments are now separate, and no one can deny that, from a public point of view, the change has been beneficial. But the old system still prevails in the small Urban and nearly all the Rural Districts. In some cases it operates unfairly to the ratepayers, as will be seen by

a careful study of the Section of this Report devoted to the sanitation of dwellings, work which involves the suppression of nuisances under the powers of the Public Health Act.

The County Medical Officer of Health makes no reflection on the "combined officials." He knows that generally they do their work as Surveyors with zeal and ability. But he desires to reiterate what was said in the Report for 1898, that conspicuously good service in one direction is not incompatible with oversight of other duties, which, by a mistaken view, come to be regarded as unimportant.

In short, more ought to be made of the Inspectors' work in most of the districts in the County. In submitting this recommendation with regard to Offices, the salaries of which are in part derived from the County Fund, it also becomes the duty of the C.M.O.H. to add a word as to the policy of separating the Department of Inspector from that of the Medical Officer of Health of the district. The plan may be said to have been tried many years ago, and abandoned. Indeed, such an arrangement is not contemplated by the Orders of the Local Government Board. The main objects of a Health or Sanitary Department is to deal with epidemics in their inception, and to permanently improve the condition of the town or district by exercising the powers of the Public Health Acts. Such being the purpose of the Department, the fact of the Inspector working independently of the Medical Officer of Health for the district must inevitably lead to confusion and delay progress. It becomes necessary to offer these observations because in one large Urban District of the County the old plan seems to have been re-introduced.

TABLE A.

Administrative County of Surrey—Vital Statistics, 1899.

Showing Birth-rates, Death-rates from all Causes, from the principal Zymotic Diseases, and from the Respiratory Organs, and Infant Mortality.

RURAL DISTRICT.	Population.	Births.	Deaths.	Birth-rate to 1000 persons living.	DEATH-RATES TO 1000 PERSONS LIVING.				Deaths of Infants under one year of age.	Deaths of Infants under one year to 1000 Births.
					All Causes.	Principal Zymotic Diseases.	Phtisis.	Respiratory Diseases.		
Chertsey ...	11,000	287	153	26.1	13.9	1.5	1.0	1.9	29	101
Egham ...	11,000	311	156	28.3	14.2	1.8	1.4	1.8	36	116
Farnham ...	15,000	503	225	33.5	15.0	0.9	1.1	2.9	36	72
Hambledon ...	21,000	488	280	23.2	13.3	0.8	0.7	1.9	59	121
Guildford ...	22,000	472	290	21.5	13.2	2.1	0.9	1.0	61	129
Dorking ...	11,000	161	145	14.6	13.2	1.4	0.6	2.6	21	130
Epsom ...	18,000	421	256	23.4	14.2	2.0	1.4	2.4	47	112
Croydon ...	32,000	823	493	25.7	15.4	2.1	1.3	3.1	129	157
Reigate ...	16,000	372	215	23.2	13.4	1.1	0.9	1.7	41	110
Godstone ...	17,000	430	249	25.3	14.6	0.7	0.9	2.6	43	100
Total of above Districts	174,000	4268	2462	24.5	14.1	1.5	1.1	2.2	502	118

URBAN DISTRICT.	Population.	Births.	Deaths.	Birth-rate to 1000 persons living.	DEATH-RATES TO 1000 PERSONS LIVING.				Deaths of Infants under one year of age.	Deaths of Infants under one year to 1000 Births.
					All Causes.			Respiratory Diseases.		
					Principal Zymotic Diseases.	Phthisis.				
Barnes ...	18,000	458	212	25·4	11·8	1·6	1·1	1·7	56	122
Richmond ...	31,000	691	453	22·3	14·6	1·6	0·8	2·2	102	148
Wimbledon ...	38,000	1031	568	27·1	14·9	1·6	0·9	2·1	163	158
Ham... ..	2,000	37	19	18·5	9·5	1·5	2·0	2·0	4	108
Kingston ...	34,000	979	424	28·8	12·5	2·2	1·4	2·1	130	133
Esher and Dittons ...	9,000	205	119	22·8	13·2	0·7	1·0	2·2	25	122
The Maldens & Coombe ...	6,000	130	59	21·7	9·8	0·5	0·3	1·8	16	123
Surbiton ...	13,000	296	161	22·8	12·4	1·5	0·8	1·8	23	78
East & West Molesey ...	7,000	161	84	23·0	12·0	1·3	0·7	1·1	26	161
Chertsey ...	13,000	300	174	23·1	13·4	3·1	0·4	1·9	44	147
Weybridge ...	5,000	102	64	20·4	12·8	1·4	1·2	1·6	16	157
Walton ...	9,000	244	140	27·1	15·6	2·6	1·1	2·3	30	123
Farnham ...	6,000	132	94	22·0	15·7	2·2	1·5	2·5	15	114
Frimley ...	6,000	164	78	27·3	13·0	1·0	0·8	1·0	20	122
Godalming ...	9,000	230	102	25·6	11·3	0·7	1·0	1·9	28	122
Guildford ..	17,000	350	216	20·6	12·7	1·0	0·5	2·5	41	117
Woking ...	13,000	394	189	30·3	14·5	2·5	1·0	1·6	53	135
Dorking ...	9,000	169	116	18·8	12·9	1·4	1·2	3·4	25	148
Leatherhead...	5,000	116	71	23·2	14·2	2·8	1·0	1·2	21	181
Epsom ...	10,000	268	147	26·8	14·7	2·3	1·5	2·0	32	119
Sutton ...	15,000	366	177	24·4	11·8	1·0	1·0	2·3	51	139
Carshalton ...	6,000	180	106	30·0	17·7	3·2	0·7	1·2	26	144
Reigate ...	26,000	612	356	23·5	13·7	1·6	1·3	1·7	84	137
Caterham ...	6,000	192	58	32·0	9·7	—	0·8	1·2	23	120
Total of above Districts	313,000	7807	4187	24·9	13·4	1·7	1·0	2·0	1054	135



III.—VITAL STATISTICS OF THE COUNTY.

In giving an account of the Vital Statistics **Population.** for the year 1899, the first point to be determined is the number of persons living in the various districts, and in the County as a whole.

The estimate of the population may be arrived at in different ways, that is to say, by the official method adopted by the Registrar-General, or by the aid of local knowledge and calculations.

In England the census is taken only once in every ten years, the date of the last one being April, 1891. By the Registrar-General's method the population of a district is calculated on the assumption that rates of increase or decrease continue during the intercensal period at the same rate as that shown by comparing the figures of the last census with those of the census before. But during the long period of ten years, changes in local circumstances frequently take place which sometimes cause the estimates to be very wide of the mark when the time for reckoning the population comes round. Consequently it has been urged that, in order to reduce the limits of error in calculations, a census should be held at shorter intervals, say once in every five years.

The objection to the Registrar-General's method of calculation is, that it is too rigid for practical purposes in rapidly-growing manufacturing districts of the North, or in the suddenly developing residential districts of the South.

Where there are good reasons for believing that the calculations are wide of the mark, attention may be directed to local estimates by Medical Officers of Health who have the

opportunity of observation, and who take into account the the best local information as to the number of houses which they know have been erected and occupied since the last census.

The following districts appear to have the chief claims for special consideration—viz., Wimbledon, Kingston, Woking, Dorking, Caterham, and Godstone Rural.

The subjoined table is arranged to show side by side the estimates from census figures, the local estimate from the Report of the Medical Officer of Health, and the provisional estimate decided on by the C.M.O.H. for this Report:—

Name of District.			Estimates from Census Figures.	Estimate of Population. Local.	Provisional Estimate of Population for County Report
Wimbledon	...	...	34,000	42,000*	38,000
Kingston...	...	...	32,000	36,000*	34,000
Woking	...	...	9,000	13,000	13,000
Dorking	...	...	8,000	8,000	9,000†
Godstone...	...	...	17,000	—	17,000
Caterham	...	...	4,000	5,000	6,000

* In the case of both Wimbledon and Kingston it will be noted that a low general death-rate accompanied a rather high infant mortality, calculated on the births and not the population. The figures of the two rates are generally found to rise and fall together. The want of consonance generally observed in this respect, and the fact that it is accentuated by an *over* estimate of population, supports the argument in favour of the lower estimate of the population.

† This population is from estimates given at County Council and Local Government Board Inquiries.

It will be seen that in all these cases, except that of Dorking, the estimates from census figures are evidently too low, and that, on the other hand, the local estimates appear to be generally too high. It is a remarkable fact that whenever a local revision of census figures takes place the tendency is in the direction of *over*, rather than *under*, estimation. It is possible that the medical officers may have been too generous in their estimates of the populations on which the death-rates are calculated, although in fairness it should be mentioned that Dr. Beale Collins, of Kingston, has confined himself to a numerical estimate considerably less than that to which he considers the local facts entitle him, and Dr. Jacob gives his Dorking population as 8,000 in round numbers, whereas the Local Authorities quote the higher estimate which the C.M.O.H. ventures to give—viz., 9,000 in round numbers.

On reference to the Population column of Table A (*Administrative County of Surrey Vital Statistics, 1899*) it will be seen that all the estimates are given in round numbers—that is to say, *to the nearest complete thousand*. This plan of using “round numbers” avoids an affectation of “accuracy” when even “approximation” must be, of course, to a certain extent doubtful.‡

It is therefore with an important reservation that the statistics of birth-rates and death-rates are now brought under

‡ The general plan of stating the population in round numbers to the nearest complete thousand works out satisfactorily in all the districts except perhaps one, viz., that of Ham. The population of this small district is between one and two thousand, probably nearer two than one. Calculations on such small populations are always liable to mislead.

review. They have been calculated with the greatest possible care and consideration, but they will be sure to need some revision when the census comes to be taken in 1901.

It should be mentioned that in the year under notice another alteration took place in the district known as Godstone Rural. Caterham has been severed from it for purposes of Local Government. The alterations of districts in respect of areas and populations which have taken place during the last decade necessitate a great deal of caution in the preparation of statistical tables in order to prevent misleading inferences being drawn.

One more remark before proceeding to the consideration of the Rates. A considerable **Public Institutions.** item in the population of Surrey is that of the more or less temporary residents in the many Public Institutions (Asylums, &c.) which are established in the County. The proportion of deaths to population at Institutions for sick persons is high, often remarkably so. These deaths are properly eliminated as not belonging to the district, and they are distributed to the districts to which they do properly belong. But the adoption of this plan necessitates also the elimination of the populations of the Institutions in order that the Death-rate may be fairly represented. Consequently, for the purposes of this section, the population of the County as a whole is understated in the tables appended to this Report.

The *Population* of the Administrative County for 1899, estimated in the usual way (with the exceptions mentioned), and allowing for Public Institutions, was, in round numbers, **487,000**. If the Institution populations be added it would be 12,000 more, *i.e.*, 499,000.

The Births numbered 12,075. Consequently **Birth-rates.** the number of births per 1000 persons living, or the *Birth-rate*, was 24·8. This figure is 1 per 1000 less than the average Birth-rate of the first half of the decade in Surrey. The Birth-rate throughout the country has generally declined of late years.

In the following Districts the rates were specially low—viz., Guildford, Richmond, Ham, Esher, Malden, Surbiton, Weybridge, and Farnham.

The extraordinarily low Birth-rate of the Dorking District will be generally noted. The Birth-rate of Dorking Town was only 14·6.

The Deaths numbered 6,649. Consequently **General** the number of deaths per 1000 persons living, **Death-rates.** or the *Death-rate*, was 13·7. This figure indicates an almost stationary Death-rate for Surrey. The advantages accruing from improved sanitation and better administration are being neutralised by an increasing infant mortality, due to causes which are, in some measure, outside the immediate control of sanitary authorities.

The Death-rate of the Rural Districts was 14·1, and that of the Urban Districts, 13·4. This difference in favour of the Urban Districts would at first sight appear anomalous, but those who are familiar with the Local Government system understand of course the real significance of these terms “Rural” and “Urban.” They refer to the powers vested in the District Council or governing authority, and do not necessarily convey any description of the district. Without this infor-

mation it would be puzzling to account for apparent anomalies in the grouping of the districts. Croydon (non-municipal), which includes the populous and, in many parts, closely-built districts of Mitcham and Merton, is grouped with the Rural Districts, whereas such places as Farnham, Weybridge and Woking, the appearance of which certainly could not be described as town-like, are, nevertheless, in Local Government language called "Urban."

In comparing the death-rates of towns, one of the first considerations is the "density of the population"—that is to say, the number of persons per acre. Other things being equal, there is a tendency for the death-rate to increase directly in proportion to the density of the population, owing to the proximity of dwellings and the greater risk of spreading diseases. But except in the case of London and some of the very large towns, the ordinary test of the density of the population, which is arrived at by dividing the population by the number of acres belonging to the Borough or District, is apt to be misleading.* The areas of local government are of every variety of shape and size, and it often happens that the population, instead of being diffused throughout, is aggregated in a comparatively small section. This is generally the case in Surrey, and consequently the density of the population, estimated in

* Even in the case of such towns as are here referred to it would be easy to demonstrate fallacies arising from estimates of the density of the population in relation to death rates. It is the *overcrowded parts* of a town (especially if these are so placed as to interfere with the circulation of fresh air from outside), not the average of the whole town, that count towards heavy death rates.

the ordinary way, seldom affords any indication of the sanitary conditions that might be expected. So that density of population cannot be fully considered in relation to the death-rates in the Urban Districts. Neither can it be taken into much account in discussing the causes of mortality in the Rural Districts, although it will be presently observed, in connection with the Typhoid Chart, that the country round Dorking, which still has the most favourable return, is at the same time the most thinly populated district in Surrey.

Too much attention need not be paid to the death-rate of one year, especially in the case of small districts. For example, the fact that Ham has the lowest death-rate in this Report is obviously of little significance, owing to the very small numbers on which the Annual Rates are based. It is, however, desirable to comment briefly on the Vital Statistics of those districts which have exceptionally high death-rates in the Table for 1899.

The districts with Death-rates above the average of 13·7 are the following:—

Chertsey R.	...	13·9	Wimbledon	...	14·9
Egham R.	...	14·2	Walton	...	15·6
Farnham R.	...	15·0	Farnham U.	...	15·7
Epsom R,	...	14·2	Woking	...	14·5
Croydon R.	...	15·4	Leatherhead	...	14·2
Godstone	...	14·6	Epsom	...	14·7
Richmond	...	14·6	Carshalton	...	17·7

With the help of Table A these rates may be dissected. It will then be found that at Carshalton the high general death-rate was the result of a high Infant and Zymotic death-rate. At Farnham Urban and Rural there was a high “Respiratory”

death-rate connected with Influenza prevalence. At Croydon Rural, Wimbledon and Richmond the heavy infant mortality renders the general death-rates high. At Woking and Leatherhead the Zymotic and Infant death-rates were high.

The death-rates of the other places named above are not so easily explained by the figures of Table A. But it must always be remembered that Influenza, which of late years has been a serious item in the mortality returns, is not included in the Zymotic diseases column. In fact, its influence on the columns specially given in the table only becomes apparent in that reserved for respiratory diseases, the mortality from which is of course to a considerable extent affected by an epidemic of Influenza.

Taking the other columns of the table in the order of their importance, that which comes last--viz., the proportion of deaths of infants under one year to 1000 births, is that which chiefly concerns the public. The Infant Mortality, as it is generally called, is estimated in relation to the births of the year under notice, and the calculations are therefore independent of any fallacy which may be due to an under- or over-estimation of the population for the time being. This column of death-rates is of grave significance.

It is true that, compared with what is taking place among the manufacturing populations of the Midlands and the North, the state of affairs in Surrey would not appear to be very unsatisfactory. But on the other hand it has been observed in these Annual Reports that remarkable variations occur in the death-rates of the several districts, and that taking a rate

of 100 as a moderate limit for a district mortality, the number of deaths in districts with rates above this not only represents an enormous loss of lives every year, but also implies impaired health among numerous survivors. Further than this, it will be noted that the general death-rate in Surrey is not decreasing as might be expected, having regard to improved sanitary circumstances. This comparatively stationary condition is the necessary outcome of a perceptibly *rising* infant death-rate. What this ominous fact portends can only be arrived at by searching local investigation. As yet it does not appear that any demand for such inquiry has arisen in any of the localities conspicuous for their heavy and increasing infant mortalities. But it is encouraging to be able to report at this very time of writing that Mr. Welch, the Chairman of the Sanitary Committee, is convening meetings of Medical Officers of Health and others immediately interested to discuss this highly important subject.

In the year under notice there were only two districts—Farnham Rural and Surbiton—with rates below 100.

In the purely country districts it was as high as 121 in Hambledon, 129 in Guildford Rural, and 130 in Dorking Rural.*

In the County towns it was as high as 147 in Chertsey, 157 in Weybridge, 135 in Woking, 148 in Dorking,* and 181 in Leatherhead.

In suburban districts it was as high as 157 in Croydon Rural, 148 in Richmond, 158 in Wimbledon, 133 in Kingston, 139 in Epsom, and 144 in Carshalton.

* The high rate of infant mortality in the Dorking Districts will be specially noted in connection with the very low birth-rate.

Coming next to the Zymotic diseases column

Zymotic it should be specially observed that Influenza

Death-rates. is not classed among the principal Zymotic diseases. The list of the diseases so classed is as follows:—Smallpox, Scarlatina or Scarlet Fever, Diphtheria with Membranous Croup, Typhus, Enteric with Continued Fevers, commonly known as “Typhoid,” Cholera, Measles, Whooping Cough, and Diarrhœa. It should be specially explained that the last-named disease, “Diarrhœa,” is the illness which prevails in epidemic form in August and September, and which is so fatal to infants. Deaths from this disease, if properly certified for registration, account for a large proportion of the Zymotic death-rate; but the fact that deaths are not properly certified for registration introduces great confusion in the reading of this column of death-rates. It is very important that this should be widely known. The subject is dealt with later on in this Report.

The following districts had Zymotic death-rates as high as 2·5 and over—viz., Chertsey 3·1, Walton 2·6, Woking 2·5, Leatherhead 2·8, Carshalton 3·2.

The preventable Zymotic diseases are fully taken into account under different headings in this Report. There is no need therefore to dwell upon them in this section. It is, however, desirable to draw attention once again to the points of resemblance between Typhoid and Tuberculosis in respect of their causes, because by so doing inducement is offered to Sanitary Authorities to increase their efforts in abating a disease which is so closely dependent upon filth, and which is so largely preventable by the exercise of the ordinary powers of the Public Health Act.

Phthisis or Consumption, which is the most prevalent form of Tuberculosis, contributes to the **Death-rates**. Death-rate 1 in 1,000 population, or about $\frac{1}{14}$ th part of the whole Death-rate. The Typhoid death-rate is about 1 in 10,000 of the population, or about $\frac{1}{140}$ th part of the whole Death-rate. It might not be thought quite so well worth while labouring to reduce this, and to lower the columns and diminish the number of cubes of the Typhoid Chart which accompanies this Report. But if it be remembered that in eliminating one case of sickness every year from Typhoid in 10,000 of the population, there is reason to believe that the same population is better by having amongst them ten cases less of that lingering and disabling illness—Consumption—the value of ordinary sanitary work is seen to be immensely enhanced.

The Zymotic death-rate is closely related to **Respiratory** the Respiratory, and so also is the Phthisis **Death-rates**. death-rate, inasmuch as the disease Phthisis or Consumption is so frequently accompanied by Pleurisy, Pneumonia and Bronchial affections.

The way in which the diseases of these four columns, “Zymotic,” “Phthisis,” “Respiratory” and “Infant,” act and react on each other, may be exemplified as follows:—An infant improperly fed gets Whooping Cough. The framework of the chest shares in the general want of bony substance. Its normal resilience after paroxysms of coughing becomes impaired. The fatality of the disease is markedly increased thereby. Moreover, in such cases if the infant recovers from the Whooping Cough, the effects on the lungs become evident in after life. The lungs, having partly lost their natural spongy and elastic

qualities, are less useful for breathing purposes. They are more prone to infection or to processes of inflammation. So that one day early in life the case which began with bad feeding may terminate by illness of the Zymotic, Phthisical, or Respiratory class. High death-rates from diseases of these three classes generally signify that there is a great deal of overcrowding.

Before concluding this section of the Report **Meteorology** it is desirable to refer to the relation of the **in relation to** Death-rate, especially that from Zymotic **Public Heath.** diseases, to meteorological conditions. The

autumn Diarrhœa, or as it is now proposed to call it, "Zymotic Enteritis," is affected by meteorological conditions and subsoil temperatures to such an extent that the death-rate of parts of some towns is influenced in a most remarkable degree. The curve which represents the rate of sickness of other infectious epidemic diseases—for example, Scarlet Fever and Typhoid—has a marked and definite relation to season, and when the usual meteorological conditions of those seasons are altered or accentuated, the effect on the prevalence of illness is at once manifest. Since the County Notification System has come into operation in London, Surrey and Essex, as well as in several Counties of the North and Midlands, it has become possible to predict (as was, in fact, done last year in both Essex and Surrey) a sudden rate of increase in the cases of Typhoid. The immediate practical application of this knowledge is obvious.

The connection between epidemic diseases and the conditions favourable to the growth of microbes, suggest the explanation of the phenomena observed in the case of the "fevers."

But the inter-relation of conditions simultaneously affecting vegetation and human health may be far more remotely and somewhat curiously illustrated by observations respecting the prevalence of cases of lead-poisoning by potable water at certain seasons of the year.

There are other ways in which meteorology may be studied with practical advantage in relation to the public health. It has therefore seemed very desirable to the C.M.O.H. that an authorized account of the meteorology of the County should, if possible, be obtained for the Annual Reports. He accordingly sought the favour of a short report from Mr. Campbell-Bayard, the well-known authority on the subject. This gentleman, who resides at Wallington, in the County of Surrey, and who has for many years recorded observations at several different places in Surrey, most kindly acceded to the request of the C.M.O.H., with the result that he is able this year to accompany the account of the prevalence of epidemic diseases with an account of the meteorological conditions which are known to favour their spread or otherwise.

IV.—METEOROLOGY OF SURREY, 1899.

BY

FRANCIS CAMPBELL-BAYARD,

Fellow (late President) Roy.Met.Soc.

Having been requested by Dr. Seaton, the Medical Officer of Health for the County of Surrey, to draw up a short report on the Meteorological conditions prevailing in the County during the year 1899, I have much pleasure in complying with his desire, though the account, owing to the lack of the necessary observations in the more distant parts of the County, must necessarily, to a certain degree, be imperfect.

THE BAROMETER.

The barometer stood above the average in seven months out of the twelve, and was particularly high during the month of November, a result which appears somewhat singular when we remember the large amount of rain which then fell, and which will be alluded to later on. The five months in which the means were below the average show considerable deficiencies. The result on the year's mean is a slight increase over the average.

TEMPERATURE.

The mean temperature of the year is nearly 2° above the average. With reference to the individual months, we notice that March, May and December are all below the average, May being extremely cold, especially at the end of the month, when great damage was done to vegetation.

All the other months were above the average, particularly January, February, July, August and September.

July and August, with a mean temperature of over 66° , are the two hottest consecutive months of which I have any record. It is a well-known fact that whenever the mean temperature of a month is much above, or below, the average of ten or more years, that month is an unhealthy one. As this will probably be dealt with in Dr. Seaton's Report, I will not further allude to it.

CLOUD.

The amount of cloud is slightly below the average of the year. The individual months, however, show some very curious anomalies. It is very singular, for instance, to find a deficiency of cloud in January and February, two winter months which were very warm, whilst we have an excess of cloud in May and December, two months which were very cold. In May, the excess of cloud was not large, and consequently we should have expected a warm or fairly warm spring month, instead of an extremely cold one, and the like remark applies to December, for a large amount of cloud tends to check radiation.

WIND.

The year has been a quiet one, strong winds throughout the County being very few, and comparatively very little damage being done. In only one month—viz., January—was the wind force above the average.

RAINFALL.

The total rainfall throughout the County, so far as I am able to judge from the "Rainfall Statistics" collected by the "Croydon Microscopical and Natural History Club," is about

3½ inches below the average. The months of January, February, September and November were very wet. With respect to November, it is certainly one of the wettest Novembers for many years past, and is remarkable besides for two exceedingly heavy falls of over an inch each. The months of March, July, August and October were very dry, and there were numerous complaints of scarcity of water in these months, more especially in July and August. Perhaps the unhealthiness of these two months may be due not only to the heat, but to the want of rain ; but I will not further allude to this, as I should be trespassing on the domain of the Medical Officer of Health.

The number of rainy days—that is, days on which 0·01 inches or more is recorded—are also much below the average. In only three months—viz., April, September and December, are the number of days above the average. December is a somewhat singular month in having a rainfall below the average, whilst the number of rainy days is in excess.

SUNSHINE.

The year will long be remembered for its sunshine. It is the sunniest year—if I may be allowed such an expression—since the invention of the Sunshine Recorder about twenty-one years ago. The only month which, so to speak, was at all much below the average, was April. The three months of June, July and August will long be remembered for a percentage of possible duration of over fifty.

In conclusion, I should have wished to have said a few words as to the effect of the meteorological conditions on vegetation and on the general health of the County ; but I refrain from doing

so, as I should be trespassing on the province of the Medical Officer of Health, whose knowledge is more extensive than my own.

For the purpose of comparison, I have given in tabular form an abstract of my own observations at Wallington, 140 feet above sea level. This station has for many years past been inspected by the Inspector appointed by the Royal Meteorological Society, and is furnished with properly verified instruments, and the time of observation is 9 a.m. The year's observations are compared with the average of the ten years 1886-95.

Wallington, Surrey.

March 15th, 1900.

Abstract of Meteorological Observations at Wallington, Surrey.

	Barometer reduced, &c. \pm avg. In. In.	Relative Humid- ity. \pm avg. p.c. p.c.	Maximum Temp. in shade. \pm avg. deg. deg.	Minimum Temp. in shade. \pm avg. deg. deg.	Minimum Temp. on Grass. \pm avg. deg. deg.	Mean Temp. \pm avg. deg. deg.	Cloud Amount. \pm avg. 0-10 0-10	Wind Force. \pm avg. 0-12 0-12	Total Rainfall. \pm avg. In. In.	No. of Rainy Days (Total). \pm avg.	Sunshine (Jordan) (Total). \pm avg. hrs. hrs.	Sunshine (Jordan). \pm avg. p.c. p.c.
1899												
Jan.	29.840—141	89—1	47.6—6.2	37.3—5.7	32.9—5.2	42.5—6.0	6.7—0.8	2.3—0.3	2.84—0.89	18 0	70.0—24.1	27—9
Feb.	29.896—179	88—1	49.2—6.4	35.2—3.8	31.4—4.1	42.2—5.1	7.1—0.4	2.2 0.0	2.42—1.21	12—1	117.5—55.9	41—19
Mar.	30.090—169	82—2	49.4—0.2	32.0—2.1	28.7—0.8	40.7—0.9	5.9—0.5	1.0—1.4	0.57—1.25	6—8	140.9—16.8	39—6
April	29.826—114	77—2	54.6—1.3	41.1—2.9	38.6—4.7	47.8—0.7	7.4—1.1	1.8—0.3	2.33—0.76	18—5	137.1—30.4	33—8
May	30.019—052	73—1	59.8—3.7	42.1—1.7	40.2—0.5	51.0—2.8	7.3—0.8	1.9—0.2	1.71—0.26	10—2	205.5— 1.6	43 0
June	30.067—029	67—8	71.4—1.8	50.0—0.2	47.1—0.5	60.7—1.0	5.4—0.9	1.0—0.9	0.77—0.80	5—5	256.3—47.6	52—10
July	30.064—133	67—9	75.9—5.6	56.3—3.4	54.8—3.9	66.1—4.5	5.0—2.0	1.1—1.2	0.60—2.91	8—6	278.4—88.0	56—18
Aug.	30.095—143	68—12	76.6—6.3	55.6—3.2	52.4—1.9	66.1—4.5	5.4—1.1	1.3—0.8	0.74—1.67	6—10	275.5—81.6	61—18
Sept.	29.873—183	73—9	66.9—0.5	50.2—1.3	47.8—1.5	58.6—0.9	6.5—0.5	1.6—0.4	2.29—1.06	15—4	176.2—16.0	47—4
Oct.	30.068—165	88—1	57.7—1.4	40.6—1.6	39.2—0.7	49.2—0.2	6.4—0.2	1.1—0.8	2.25—1.06	12—4	121.8—20.5	37—6
Nov	30.196—258	87—3	52.9—3.1	42.3—3.6	39.7—4.7	47.6—3.4	8.0—0.4	1.3—0.7	4.49—1.29	10—8	55.4— 3.8	20—1
Dec.	29.909—061	91 0	41.5—1.6	30.7—1.7	29.2—0.5	36.1—1.7	8.1—1.0	1.1—1.0	1.61—3.55	20—6	37.9— 1.2	15—1
Year	29.996—033	79—4	58.6—2.0	42.8—1.4	40.2—2.1	50.7—1.7	6.6—0.2	1.5—0.6	22.62—3.29	140—29	1872.5—321.1	39—6

V.—PREVENTIVE MEASURES.

Vaccination. — It is unnecessary to say much under this head. At the beginning of the year the Council issued a leaflet prepared by the Committee, setting forth in plain language the benefits of Vaccination. Altogether 11,500 copies of the leaflet have been distributed to members of the Surrey Boards of Guardians and others.

The value of carefully arranged information of this kind is much appreciated by officers and others who are willing to take pains in explaining the truth about Vaccination.

The pamphlets issued by the Jenner Society are particularly instructive, attention is specially directed to one published in 1899, in which the statistical history of Smallpox in relation to compulsory or systematic Vaccination of infants is explained by means of diagrams in a way that will materially assist in preventing misconception.

At the meeting of the British Medical Association, held at Portsmouth in August, the C.M.O.H. opened a discussion on "Recent Vaccination Legislation and the Prevention of Smallpox." The qualifications, duties, instructions, and remuneration of Public Vaccinators, as well as the new system of domiciliary visits, were the principal topics before the meeting. The proceedings were fully reported in No. 2018 of the *British Medical Journal*, p. 577.

The remarks now referred to conclude as follows: "A discussion of the prevention of epidemic Smallpox would,

at the present day, be considered incomplete without reference to municipal and county sanitary organisation, and the provision of isolation hospital accommodation. Into the merits of isolation, on a proper system, as a necessary auxiliary to Vaccination, I do not propose to enter now. I have, at various times, contributed to the discussion of this subject, and need hardly refer to it again.

“ I may remind you that medical officers of health generally, while maintaining that Vaccination is the first line of defence, are strongly in favour of isolation as auxiliary to the main prophylactic. What would London do if it were proposed to abolish the hospital at Long Reach? Is not every medical officer of health of a large town anxious to secure hospital accommodation for initial imported cases? Is it not their constant complaint that they are not sufficiently helped by the powers that be?

“ Here is a case within my own official knowledge and experience, illustrating the difficulties under which a sanitary authority, anxious to do its duty, labours at the present day. A case of Smallpox is imported into a common lodging house. It is removed, under compulsion, to a workhouse. Its isolation at the workhouse is against official rules. It is removed from there to an ordinary isolation hospital, where cases of Scarlet Fever, Diphtheria, and Typhoid are under treatment, and it is again against official rules. The authority in question endeavours to obtain a site for a Smallpox Hospital in one of the most lonely places within thirty miles of London. It is opposed by a resident within a mile, and eventually has to expend a very large sum in defending this action. Such a case,

I venture to say, only needs to be stated to show that if Smallpox should become prevalent, more help will be needed from the Legislature to secure efficient prophylactic measures.

“No department concerned in protecting the country generally from the invasion and development of epidemic disease could, under such circumstances, be considered free from responsibility in the event of some great disaster.

“The provision of suitable hospital accommodation for large populations and areas, by combination if necessary, is only one part of the problem to be solved. The establishment of a proper organisation, under skilled medical direction, is urgently required in every County and all the large towns of England.

“I do not express any view as to the best arrangement for such a purpose, as so much depends upon individuals, as well as the terms of appointments; but I do unhesitatingly declare that the organisation of many Counties and fair-sized Urban Districts is most unsatisfactory, and that, consequently, their condition is a source of public danger.”

Smallpox Hospitals.—During the last fifteen years it has devolved upon Medical Officers of Health for large towns and districts, in spite of much discouragement, to insist on the advantages of Hospital Isolation in the prevention of Smallpox. Latterly members of the medical department of the Local Government Board have begun to show their appreciation of the very strong evidence that has been accumulating in favour of the system.

During the year under notice, the hospital at Whitemoor, about which there was so much litigation, has been completed. This establishment ought to be made available for South-West Surrey—that is to say, the districts of Frimley, Farnham and Hambledon, as well as those of Guildford and Godalming. It would be a wasteful expenditure to require separate accommodation for these districts. The cases that have occurred in the County during the past ten years have been few and far between. Proper isolation is absolutely essential for preventive purposes, but the amount of accommodation for the purpose need not be large, provided the County holds its own in the matter of Vaccination. Steps have been taken for the provision of accommodation at North Cheam for Croydon Borough, the Croydon Rural and Wimbledon Districts. To these the districts of the Kingston and Epsom Unions might well be joined. Nearly the whole of the North of the County would then be provided. There would only remain the South-Eastern division of the County to arrange for, and this ought not to be difficult when the New Reigate and Redhill Isolation Hospital is established, as the present accommodation near the Sewage Farm at Earlswood might become available. The County would then be sufficiently well equipped, provided always that the New Vaccination Act continues to work satisfactorily, as appears to be likely.

Isolation Hospitals.—As regards the provision of hospital accommodation for other diseases which require isolation, a short Report, dated October 19th, was prepared by the C.M.O.H. to show the present condition of the County. This is printed in the Quarterly Volume, November 14th, pp. 1007-10. A table is there given of the 34

sanitary districts of the County, their respective populations, and the facts as to hospital accommodation, whether sufficient or not. Twenty-six out of the 34 districts are now provided with accommodation, which in some instances is excellent in character. The 'Thirty-eighth' Annual Report of the Local Government Board, 1898-99, contains, at p. 127, the following description of one of these hospitals given in the report of Mr. Baldwyn Fleming, General Inspector of the Board :

“The Farnham Joint Isolation Hospital has been completed. An iron hospital was used while the permanent buildings were in preparation. The iron hospital was opened on 13th May, 1898. The permanent buildings were completed and first used on 19th December, 1898. They were formerly opened on 2nd January, 1899.

“I visited the hospital with the Chairman of the Hospital Committee (G. F. Roumieu, Esq., J.P.) and the Medical Officer of Health for Farnham Rural District (Dr. J. A. Lorimer) on 17th January, 1899. The position, the buildings, and the arrangements are excellent, and reflect the greatest credit upon those who have been instrumental in causing the provision of this most valuable and satisfactory protection of the public health.

“Good fever wards and appurtenances cannot be erected at a small cost, and the expenditure in this instance was a considerable one. The land cost £800; the buildings £6,200, including extras, laying on water, architect's fees, &c.; the furnishing £750, including planting, laying grounds, &c., and ambulance.

“ There are 20 beds and 4 cots in the permanent wards, and 12 beds in the temporary iron block.

“ Good accommodation is made in the administrative block for such nurses as may at any time be required for the day and night nursing of different infectious fevers. The block affords provision for the matron, 6 nurses, 2 servants, and the porter. No unnecessary expense has been incurred, and the buildings, though pleasant to look upon and admirably adapted to their purpose, are plain and free from any costly ornamentation.

“ That the expenditure was fully warranted, and that it has been an economical one, may be gathered from the following particulars. Up to the date of my visit 32 cases had been under treatment, mostly Diphtheria and Scarlet Fever. There had not been a single death, although some of the cases had been severe. The patients then in hospital were convalescing, and all those who had left had made good recoveries.

“ The Medical Officer of Health said that the hospital had been the means of preventing three epidemics, and at the time of my visit he was able to state that every known case of infectious fever in the district was actually in the hospital and thus under thorough control.”—*Twenty-eighth Annual Report of the Local Government Board*, 1898-9, p. 127.

The districts which have no accommodation at all are the following: Kingston (population 34,000), Hambledon Rural (population 21,000), Dorking, Urban and Rural (population 18,000), Egham (population 11,000), Caterham

(population 9,000), Frimley and Camberley (population 6,000), Molesey (population 6,000). Thus estimating the population of the County, including that of its public institutions, at 499,000, the population provided for is 394,000, leaving 105,000 still to be provided for.

The time is past when it was necessary to plead for the establishment of these hospitals on *à priori* grounds. Their value is beyond question. It is thus tersely described in a report in the *British Medical Journal* of a speech at Enfield by Sir Walter Foster, M.D., M.P., late Parliamentary Secretary of the Local Government Board. "Sir Walter Foster observed that Dr. Farr had shown that every life lost cost the community £150, so that if the hospital only saved nine lives a year the district would see its money back with a nice margin for investment. The total local indebtedness of the country was £252,000,000, of which only £1,500,000 had been spent on hospitals. Sir Walter Foster expressed the wish that the whole of the money was as wisely invested. In illustration of this he said that in 1888 the deaths among cases of Scarlet Fever amounted to 9 per cent., but this had been reduced in 1898, ten years, by isolation, to $4\frac{1}{2}$ per cent.; deaths among cases of Diphtheria were one half in 1888, but had fallen to one sixth in 1898."—From Report in No. 2042 of the *British Medical Journal*, p. 400.

To this it might be added that, if all cases of Typhoid (Enteric) Fever occurring in crowded and ill-drained houses and cottages could be removed to hospital and treated there by skilled nurses with proper precautions, a wonderful saving of life, especially amongst the bread-winners of families, would be immediately effected.

It will be gathered from published reports that the condition of Kingston is most unsatisfactory in respect of this matter. Surely the inhabitants of so important a town and neighbourhood will not rest satisfied with the inaction of their governing body.

Open - Air Treatment.—The mitigation of Scarlet Fever, which has taken place simultaneously with the extension of the hospital system, is at any rate in part due to the hospital conditions, which approximate to what is now spoken of as “the open-air treatment.” The sphere of preventive medical work has been widened of late. The year under notice has been made famous in the annals of Sanitary Authorities by the interest shown in their proceedings by the Society over which His Royal Highness the Prince of Wales presides, and which has for its great object the diffusion of knowledge respecting the best practicable means for treating and preventing the spread of Phthisis or Consumption. This disease, which is so prevalent in England, still accounts for some 500 deaths annually even in the County of Surrey, which has great climatic and other advantages. There is ample scope, therefore, for the Councils to supplement the natural hygienic advantages which their Districts possess by improvements in sanitation and local government generally.

Consumption.—Under the heading Consumption there appears the following paragraph in the Quarterly Volume of Reports to the Council, for May, 1899, p. 373:—“Copies of the Leaflet submitted to the Council at their last meeting have been circulated for the purpose of distribution among all the Parish Meetings, Parish Councils, and Urban District Councils in the

County, and copies have also been sent to the Rural District Councils and Boards of Guardians in the County, and to the sixty-two County Councils and sixty-four County Boroughs in England and Wales. Altogether 13,000 copies of this Leaflet have been distributed." (*See Appendix I. p. 53*)

Under the heading Tuberculosis the following appears in the same Vol., p. 485 : – "The Leaflets dealing with the disease of Tuberculosis, which the Committee caused to be prepared, have been circulated by the distribution of copies by the Metropolitan and County Police among cow-keepers and other persons in the County interested in the disease. The County Inspectors of Weights and Measures have also been supplied with copies of the Tuberculosis Leaflet, with instructions to leave a copy at the premises of every registered cow-keeper, dairyman and purveyor of milk visited by them in course of their duties." (*See Appendix II. p. 56*).

At the meetings of Medical Officers of Health, the British Medical Association, and the Sanitary Institute, the subject of Consumption and its prevention has been the chief topic of discussion. At these congresses and conferences the County Council has been represented by the Chairman of the Sanitary Committee, William Welch, Esq., and the County Medical Officer of Health. A large and influential gathering of the National Association for the Prevention of Consumption and Tuberculosis, on December 18th, 1899, presided over by the Earl of Derby, K.G., was also attended by the Chairman of the Sanitary Committee and the County Medical Officer of Health.

The need for systematic education of the public as regards

the particular channels of infection and the means of avoiding them has been ably enforced by Dr. Heron, Physician to the City of London Chest Hospital. Much good is being done by the diffusion of information by well-selected agencies such as the Council has chosen. The discussions at congresses and the comments of the journals thereon are also useful to this end. But in order to drive home the lesson to be drawn from modern knowledge and experience it is desirable that Consumption and Tuberculosis, like some of the Zymotic diseases, should be, to some extent, under public control. The C.M.O.H. is in agreement with his colleagues the Medical Officers for Manchester and Brighton in advocating systematic *voluntary* notification—the Sanitary Authorities to pay the fees for the medical certificates, and to provide free disinfection. The advocacy of *compulsory* notification of Phthisis or Consumption is quite another matter. The public are not ready for this measure, which, if it were tried at present, would be sure to defeat its own end.

In the County of Surrey the work which has contributed most largely to the diminution of Phthisis is precisely that which is most efficacious in suppressing Typhoid.

It will be seen, therefore, that Sanitary Authorities have for many years been actively engaged in the prevention of Tuberculosis, and that already their labours, though they have not received much public recognition, have resulted in actual diminution of a large amount of suffering.*

* An excellent address on the Rôle of Municipal and Sanitary Authorities by the well-known Medical Officer of Health, Dr. John McVail, has lately been published by the Civic Society of Glasgow. It may be recommended to the attention of those special interested in the subject.—C.M.O.H.

Before quitting this part of the subject, attention should be specially called to the spread of Tuberculosis among milch cows. The way to prevent this and to stop the spread of Tuberculosis to children through infected milk is to attend strictly to the sanitation of cow-sheds. This is a matter over which the District Councils have control. Medical Officers of Health and Sanitary Inspectors also have defined duties relating thereto. Professor Wortley Axe, the Chief County Veterinary Inspector, has expressed his emphatic opinion that the prevention of Tuberculosis among cattle is chiefly dependent upon the conditions of air, space, ventilation, cleanliness, and drainage, in short the sanitation of the buildings in which they are housed. The late Sir Richard Thorne-Thorne, speaking of the future work of medical sanitarians in the control of Tuberculosis, observed that to a large extent the dark, dirty, stuffy, human habitation formerly so common had disappeared, but that the dark, dirty, and stuffy cow-shed had still to be got rid of. In expressing his agreement with these authorities, the County Medical Officer of Health desires to add that he has had a great deal of practical experience of the strong prejudices, together with the difficulties arising from financial considerations, which so often bar the way of improvement. He hopes, therefore, that his colleagues will be able, not only by reports, but occasionally by active interference as provided for by Law, to keep this most important subject well before the District Councils.

In connection with this subject of Tuberculosis and milk supplies, it is well to note that special attention is being given by technical instructors to the best practical methods of sterilizing milk without spoiling its taste or affecting it in other ways.

Typhoid (Enteric) Fever, as usual, has received very close attention in the County during the year under notice. It is an object of ambition with all the Medical Officers of Health to get as low a record as possible of this sickness. They desire this chiefly because Typhoid is always reckoned the most preventable by the measures which the Public Health Act provides for, and which Sanitary Authorities were created to enforce and carry out. They recognise, in short, that the average "Typhoid rate" is an index of the activity of the District Council. At the same time they are fully aware that in reducing the prevalence of one disease they are, at the same time, exercising a great influence over another disease — viz., Tuberculosis, which is at any rate partly dependent on similar conditions. Attention to health nuisances generally about dwellings, and especially the abolition of defective drains, cesspools and privy pits, which render the soil on which dwellings stand damp, foul and unhealthy, is the way to diminish Typhoid and Consumption simultaneously.

A certain proportion of the cases in Surrey, as elsewhere, are genuine imported cases, but unless it is perfectly clear that infection has been taken elsewhere, and as long as there are nuisances in the vicinity, it is unnecessary to go far afield in search of the cause of illness, but to insist on proper steps being taken to alter or remove local conditions. For this purpose, the much-needed work of the Sanitary Inspector must again be referred to.

In connection with this subject it may be mentioned that a long correspondence took place between the County Medical Officer of Health and Dr. Shirley Murphy, who was

anxious to obtain certain particulars with regard to cases of Typhoid in Surrey from the records of the Medical Officers of Health. The County Medical Officer of Health is always glad to assist him as far as possible in his interesting and important researches, provided, of course, that the regular returns which the Council find so useful for County purposes are in no way interfered with. Any fresh light that can be thrown on the causation of Typhoid is valuable. But the chief causes are perfectly well understood. It is by the suppression of nuisances and the improvement of nasty unwholesome dwellings that the disease is most surely prevented. Such work is of paramount importance, and anything tending to divert the attention of Sanitary Authorities from it becomes a public misfortune.

In common with all Zymotic diseases, Typhoid is much under the influence of season. The summer and early autumn of 1899 were very remarkable in respect of their meteorological conditions. In his monthly Zymotic return for August (No. 56 of the series) the County Medical Officer of Health reported as follows:—"The effects of the unusually hot dry weather are apparent in the returns of Zymotic disease for August. The autumnal increase of Typhoid has commenced early this year. Its chief cause has evidently been the stagnation of filth near to dwellings. As might be expected under the circumstances, the prevalence has been almost entirely among urban populations. The special attention of Sanitary Authorities should be directed to the flushing and cleansing of all sewers and drains, and the abatement of filth nuisances generally. Inquiries were made personally by the Medical Officers of Health of almost all the districts concerned respecting the 'outbreaks' of Typhoid reported in July. From the dates of the 'commencement of

illness,' it appeared that some of them might have been imported, but in most instances they were clearly due to local sanitary defects, as at Mitcham, where the Medical Officer of Health directly ascribes the illness to the 'very bad sanitary condition of the house.' The advantages to the districts and County at large arising out of prompt inquiries respecting outbreaks of this serious, and at the same time absolutely preventable, disease are too obvious to need emphasis."

The chart of Typhoid (Enteric) Fever, which was given for the first time last year, and which enables Authorities to see at a glance how they stand, is brought up to date this year. It mostly speaks for itself, but it may be well to add a few notes of explanation with regard to some of the districts. There will also appear in the Appendix to this Section a list of the notifications and deaths on which the Chart is based.

NOTES ON THE TYPHOID CHART.

It is explained in the Heading of the Chart that it relates to Notifications and Deaths from Typhoid in the five years 1895-9. This covers the whole period during which the "County Zymotic Returns" have been issued.

The numbers of Notifications and Deaths upon which the rates have been calculated are given in Tables B and C (Appendix III. p. 58-9). The populations will be seen to be the same as those used in Table A—viz., those for 1899. The difference between these figures and those which might be taken to represent the mean populations of the five years is too slight to noticeably affect the Chart. The estimate of the population for Godstone and Caterham was revised after the Chart was prepared. In these instances the estimates for Chart and Table are very nearly, but not quite the same.



DIAGRAM TO SHOW THE PROPORTION OF ENTERIC AND DEATHS IN THE SANITARY DISTRICTS OF SURREY OFFICER OF HEALTH FOR THE FIVE YEARS 1895-6-7--

ANNUAL AVERAGE RATE PER 10,000 POPULATION.											DISTRICTS CONTIGUOUS TO LONDON OR OF AN URBAN AND SUBURBAN CHARACTER.	
											RICHMOND	WATER. Corporation sources Oolite, Chalk, Alluvial, River. SEWERAGE. Complete. Popn. 31,000
											BARNES	WATER. Southwark Company, source River. SEWERAGE. Complete. Popn. 18,000
											WIMBLEDON	WATER. Southwark & Lambeth Companies, sources River. SEWERAGE. Complete. Popn. 38,000
											CARSHALTON	WATER. Sutton Company, source Chalk. SEWERAGE. In progress. Popn. 6,000
											CROYDON R.	WATER. Lmbth & Swark & E. Surrey Cos.; sources River & Chalk SEWERAGE. Populous areas complete. Popn. 32,000
											SUTTON	WATER. Sutton Company, source Chalk SEWERAGE. Complete. Popn. 15,000
											KINGSTON	WATER. Lambeth Company, source River. SEWERAGE. Complete. Popn. 34,000
											GUILDFORD	WATER. Corporation, source Chalk with Alluvial. SEWERAGE. Complete. Popn. 17,000
											MALDEN	WATER. Lambeth Company, source River. SEWERAGE. Nearly complete. Popn. 6,000
											SURBITON	WATER. Lambeth Company, source River SEWERAGE. Complete. Popn. 13,000
											EPSOM	WATER. District Council, source Chalk SEWERAGE. Complete. Popn. 10,000
											HAM	WATER. Swark. & Lmbth. Cos., sources River, some prvte. wells SEWERAGE. Nearly complete. Popn. 2,000
											REIGATE	WATER. East Surrey Co., source chiefly Chalk, some Greensand SEWERAGE. Complete. Popn. 26,000
											FARNHAM	WATER. Company sources Greensand & Bagshot beds. SEWERAGE and flushing improving. Popn. 6,000
											WOKING	WATER. Company source Chalk. Private wells. SEWERAGE. In progress. Popn. 13,000
											HAMBLEDON	WATER. Supplied to Cranleigh, Bramley and Shalford. SEWERAGE. For Cranleigh. Popn. sparse 21,000
											CHELTENHAM	WATER. West Surrey Co., source River.

AMERICAN
SURVEY
1900-1901

HAMBLETON
CHERTSEY

Popn. 13,000
Popn. 9,000

WATER. Supply Co. (Leatherhead, Bagshot, & private wells).
SEWERAGE. None. Complete.
WATER. West Surrey Co. source River.
SEWERAGE. None. Complete.

CONTINUED (TYPHOID) FEVER NOTIFICATIONS
FROM THE RECORDS OF THE COUNTY MEDICAL
INCLUSIVE.

NOTIFICATIONS

DEATHS

OBJECTS OF A RURAL AND SEMIRURAL CHARACTER,

MOLESEY	WATER. Lambeth Company, source River. SEWERAGE. Nearly complete.	Popn. 7,000
LEATHERHEAD	WATER. Company, source Chalk. SEWERAGE. Commenced. Pails & cesspools.	P. 5,000
REIGATE R.	WATER. East Surrey Co. source chiefly Chalk, some Greensand SEWERAGE. For Horley & Merstham.	P. sparse 16,000
FARNHAM R.	WATER. Private wells and Wey Valley Co. SEWERAGE. No systems.	Popn. sparse 15,000
ESHER	WATER. Lambeth Company, source River. SEWERAGE. Being altered.	Popn. 9,000
WEYBRIDGE	WATER. West Surrey Co., source River. SEWERAGE. Complete.	Popn. 5,000
CHERTSEY R.	WATER. West Surrey & S.W. Subn. & Wkg. Cos. also private wells SEWERAGE. No systems.	Popn. sparse 11,000
FRIMLEY	WATER. Company source, Bagshot beds. SEWERAGE. Nearly complete.	Popn. 6,000
WALTON	WATER. West Surrey Co., source River. SEWERAGE. New system in progress.	Popn. 9,000
EPSOM R.	WATER. East Surrey, Leatherhead & Sutton Cos. sources Chalk SEWERAGE. Three systems in progress.	Pn. 18,000
DORKING	WATER. Company sources, Greensand. SEWERAGE. Complete.	Popn. 9,000
EGHAM	WATER. S.W. Subn. Co. source River - private wells. SEWERAGE. None-wasting cesspools.	Popn. 11,000
GUILDFORD R.	WATER. Four public Cos. & private wells. SEWERAGE. Systems Ripley & Shere.	Popn. 22,000
GODSTONE	WATER. East Surrey Co., source chiefly Chalk. SEWERAGE. Three systems in progress.	Popn. 25,000
DORKING R.	WATER. Co. source Greensand. Leith Hill for Westcott & Holmwood SEWERAGE. None.	Popn. very sparse 16,000

CROYDON BOROUGH	WATER. Lambeth Co. & Corpn. Sources, River & Chalk SEWERAGE. Complete.
LONDON COUNTY	WATER. Metropn Cos. Sources, chiefly River, partly Chalk. SEWERAGE. Complete.



The Case-rates and Death-rates are calculated per 10,000 of the population for convenience of representation. On this plan Epsom, which has a population of 10,000, gives a Case-rate *equal to* the figure (3·2) which represents the yearly average of the number of cases. Weybridge, with only 5,000 population, also gives a Case-rate of 3·2, which is of course *double* the yearly average number of cases (1·6). Again, Richmond, with a population of a little over 30,000, gives a Case-rate which is slightly under *a third* of the yearly average number of cases (24).

Case-mortality is an expression which is used to denote the percentage of fatal cases. The total number of cases notified in the five years having been 1,009, of which 164 were fatal, the case mortality is $\frac{164}{1009} = 16\cdot3$ per cent. On comparing the Chart issued in this Report with that issued in the Report of last June, it will be found that 5 cubes have been eliminated—*i.e.*, in the Urban Districts 2, and in the Rural Districts 3. There is also an accompanying reduction in the mortality. So that on the whole the results are satisfactory.

The improvement would have been marked but for the unfavourable meteorological conditions of the early autumn season.

At **Richmond**, there is a slight improvement. A few old-fashioned practitioners still adhere to the old system of certifying cases of Typhoid (or Enteric) as “Continued Fever.” Cases notified as “Continued” are invariably grouped with Typhoid. Objections to any comparison of districts on this score apply to all districts. Some further local inquiry, however, into the causes of the undue prevalence of Typhoid is urgently required.

At **Barnes** there is a slight decrease.

At **Wimbledon**, on the other hand, there is a slight increase. The Report of the Medical Officer of Health contains

an excellent account of all the cases, showing how they originated. It is by making and publishing inquiries of this kind that Sanitary Authorities furnish the very best possible guarantee of safety against epidemics to the community whose interests they are appointed to guard.

At **Carshalton** there has been an increase. The Case-mortality was also more than double that of the whole County.

At **Sutton** and **Guildford** the decrease has been associated with sewerage work.

Epsom and **Redhill**, where sewerage works have for a long time been in operation, both maintain their high position.

Among the more rural populations, it will be noted on comparing the record of 1899 with that of previous years, that the drainage improvements now in progress are producing excellent results. The position of **Woking** is unsatisfactory, but it is confidently expected that great improvement will take place as the health nuisances near dwellings disappear with the progress of drainage works. **Hambledon** still has a higher rate than might be expected from its rural character and great natural advantages. Close attention to the ordinary sanitation requirements of the districts, and application of the provisions of the Public Health Act, seem to be indicated. At **Chertsey** the Chart fully supports the argument of the Medical Officer of Health, that the place is "badly in need of a Sewerage System." At **Godalming** and **Molesey** the Sewerage Works have not been in operation long enough as yet to produce their full effect. At **Esher** and **Weybridge**, on the other hand, the benefits seem to have been in great measure secured.

Egham seems to afford an example of a district which is in many respects an exception to the general rule by which inattention to what are comprehensively described as sanitary conditions is accompanied by the prevalence of a certain class of preventable disease. It must, however, be remembered that the population of this district is comparatively small, and that the dwellings are not placed close together; and that, notwithstanding these favouring conditions, the Medical Officer of Health expresses the opinion that "a continuance of its immunity from serious epidemic outbreaks cannot be calculated on." (Report of the Medical Officer of Health Egham R.D. for 1899.)

When the position of the districts in Surrey comes to be compared with that of London, it is again found not to be as satisfactory as might have been expected. At the same time there is no reason to doubt that the position in the County might be vastly improved in several districts by application of the ordinary powers of the Public Health Act.

MONTHLY ZYMOTIC RETURNS.

The issue in the form of a circular of the notification returns for every district each month has proceeded uninterruptedly now for a period of five years. The circulars afford a good deal of information with regard to the other notifiable diseases, viz:—Scarlet Fever, Diphtheria, Erysipelas and Puerperal Fever. It is not proposed in this Report to discuss these diseases exhaustively from the preventive point of view. But it is desirable once more to refer to the evidence, which is being put forward in several quarters, of the great good achieved by the hospital treatment of both Scarlet Fever and Diphtheria. It would be hazardous to found much on the Case-mortality

returns of small districts taken separately; but it is certainly encouraging to note that the fatality of Diphtheria is decreasing with the extension of the hospital system. Whether this is to be attributed to the Anti-toxin treatment or to improved hygienic circumstances is a subject which can only be determined by very careful and exhaustive inquiry. It is to be hoped such inquiry may be made. In the meanwhile record is kept of the varying Case-mortality in hospital and non-hospital districts. It is satisfactory to note that in the whole County the Case-mortality of Diphtheria in 1899 was only 14.7 per cent.

DISINFECTION.

In concluding this section of the Report for 1899, the C.M.O.H. must not omit to mention that he has been referred to by the District Council of Farnham Rural and other authorities on questions of difference as to the measures of disinfection most suitable under different circumstances. He has given advice freely and to the best of his ability. The substance of what he has said under this head has been summarized in the very excellent and practical "Directions" prepared by Dr. John Gay and issued as a pamphlet, at a nominal price, under the authority of the National Health Society.

APPENDIX I. TO SECTION V.

MEMORANDUM RESPECTING THE PREVENTION OF CONSUMPTION.

Consumption is not inherited ; but, like many other well-known diseases, it is caught.

It is properly called a preventable ailment, and yet it is one of the most fatal diseases, causing one death in every ten in England.

It is almost always caught either from a person who is suffering from the disease, or through infected air, milk, and possibly meat.

Some children are born with a constitution which strongly favours their catching Consumption, although it is not born with them. Such persons ought to be very careful to avoid exposure to the disease.

Intemperance, overcrowding, bad air, darkness, dampness, colds, sore throats are amongst the causes that make people liable to take Consumption, by weakening their constitutions.

Good health is the best protection against the disease.

Consumption is caused by a germ, which may also cause disease of other parts of the body besides the chest, such as the bowels, especially in children, who are often attacked if infected milk is used.

All milk should therefore be boiled, by which the germs are killed.

Every person suffering from Consumption may give the disease to other persons, by means of the spit, which contains the germs.

As long as the spit is moist it will not do much harm ; but when dry it becomes very dangerous, as the dust, with its germs, can get into the air breathed.

Consumptive persons should never spit upon the floor, nor into a handkerchief which has to be put into the pocket or under the pillow. They should take care that no spit is smeared over their bed-clothes or night-dresses, or on their beards or moustaches.

A case of Consumption may be made almost harmless to other people by preventing the spit from drying and becoming dust.

The greatest care is necessary when in-doors. A consumptive person should use a spit cup, containing a little water or water and carbolic acid, or should spit into a rag or piece of paper, which can be burned at once.

When out-of-doors there is not so much danger, as the germs are killed by sunlight and fresh air. A special spit bottle, to be carried in the pocket, can be bought for a small sum; failing this, a consumptive person should spit over a street gully or into the horse-road—never on the footpath, nor in a tramcar, omnibus, cab, or railway carriage. It is better to spit on the ground than into a handkerchief.

If a handkerchief or any article of clothing has been soiled with spit, it should be kept wet till it can be boiled or washed.

The contents of the spit cup or spit bottle should be emptied down a water-closet or drain, or on to a fire, and the bottle or cup should be cleaned with boiling water, with or without a disinfectant.

Spoons, cups, or other articles, after being used by anyone, should be washed in hot water before being used again.

No mother who is consumptive should suckle a baby.

[N.B.—Consumption is not caught from the breath or the skin. If proper precautions are taken there is no danger from living with, or being in company of, persons suffering from it.]

DISINFECTION.

Sunlight and fresh air are the very best disinfectants; they should be availed of very freely.

In cleaning rooms, damp dusters should be used, and wet tea-leaves or sawdust should be put down before sweeping, so that the dust will be removed without being spread through the air. The dusters should be boiled, and the sawdust or tea-leaves burned.

After the death of a consumptive person it is necessary that washing and disinfection should be thoroughly carried out.

[*N.B.—All Medical Practitioners should be informed by the Sanitary Authority of the District that, after deaths or removals of patients suffering from Consumption, disinfection of the rooms, &c., will be undertaken free of charge. Such disinfection, if followed by proper scraping and cleansing operations, would notably diminish the spread of Consumption.*]

WM. WELCH,

Chairman of the Sanitary Committee.

EDWARD SEATON, M.D.,

County Medical Officer of Health.

APPENDIX II. TO SECTION V.

TO COW-KEEPERS, DAIRYMEN, PURVEYORS OF MILK AND OTHERS.

TUBERCULOSIS IN CATTLE.

In view of the great prevalence of Tuberculosis among dairy cattle, and the danger of milk contamination arising therefrom, the attention of dairy farmers and others is called to the following facts and recommendations :—

1. Tuberculosis is a contagious disease communicable from animals to man, and from one animal to another, chiefly by breathing air contaminated with infection given out from the sick, and by eating food charged with the virus. The symptoms of Tuberculosis are too ill-defined to permit of its detection in the ordinary way, but by the judicious employment of the tuberculin test cattle affected with the disease in any stage may be distinguished from those not so affected.

2. Animals found to be suffering from Tuberculosis, either by the tuberculin test or otherwise, should, as far as practicable, be separated from healthy stock, and such as are found in a low and wasted condition should be destroyed and buried.

3. Milk from cows affected with disease of the udder should not be used for human consumption until the gland has been declared free from Tuberculosis, and is again restored to a normal condition.

4. Calves from cows affected with Tuberculosis should be removed from the dam at birth and reared on milk from healthy stock.

5. Pigs and fowls suffering from wasting disease should be excluded from yards, sheds and pastures containing cattle, unless the former are certified free from Tuberculosis by a competent person.

6. Dairy cattle should be kept in the open as much as possible, at which time the doors, windows and ventilators of the byres should be thrown open to their fullest extent.

7. Overcrowding should be strictly guarded against, and a free current of air through the shed should be allowed both night and day.

8. Calves at grass should not be pastured with milch cows or be allowed to run over fields where the latter habitually graze.

9. The drains of byres should be kept in good working order and flushed daily, the walls periodically lime-whited, and the mangers and fittings washed and disinfected.

10. Men suffering from consumption should not be allowed to take part in the management of dairy cattle or in any branch of dairy work.

11. Tuberculosis may be suspected :

- a.* When milch cows fall away in flesh without obvious reason under a liberal system of feeding;
- b.* When with general unthriftiness there is associated cough and embarrassment of breathing;
- c.* When with continuous wasting there is loss of appetite and chronic diarrhoea;
- d.* When glandular swellings appear in the throat, at the root of the neck, or in the flank;
- e.* When hard swellings occur in one or more quarters of the udder;
- f.* When with any of these conditions or combinations of them the milk becomes thin and watery, or presents yellow discoloration and curdiness.

J. WORTLEY AXE,

Chief County Veterinary Inspector.

TABLE B.—APPENDIX III. TO SECTION V.

TYPHOID FEVER NOTIFICATIONS.

DISTRICT.	1895.	1896.	1897.	1898.	1899.	Total.	Average.	Case Rate per 10,000.
Barnes	10	10	9	12	9	50	10	5·6
Richmond	33	17	26	22	22	120	24	7·7
Wimbledon	12	10	17	12	45	96	19·2	5·1
Ham	1	1	0	1	0	3	·6	3·0
Kingston	8	14	18	8	20	68	13·6	4·0
Esher	1	3	3	4	4	15	3	3·3
Malden	2	0	5	1	2	10	2	3·3
Surbiton	7	4	1	2	7	21	4·2	3·2
Molesey	2	2	5	0	7	16	3·2	4·6
Chertsey	6	3	4	11	7	31	6·2	4·8
Chertsey R.	5	4	3	3	2	17	3·4	3·1
Egham	1	3	7	1	0	12	2·4	2·2
Weybridge	3	2	2	0	1	8	1·6	3·2
Walton	5	0	4	3	1	13	2·6	2·9
Farnham	12	13	2	2	1	30	6	10·0
Farnham R.	10	3	8	2	3	26	5·2	3·5
Frimley	0	4	2	2	1	9	1·8	3·0
Hambleton	9	16	17	11	5	58	11·6	5·5
Godalming	4	4	5	7	1	21	4·2	4·7
Guildford	5	5	7	7	5	29	5·8	3·4
Guildford R.	5	2	0	7	6	20	4	1·8
Woking	16	8	7	11	11	53	10·6	8·2
Dorking R.	1	0	5	0	2	8	1·6	1·5
Dorking	2	2	2	3	2	11	2·2	2·4
Leatherhead	0	3	3	1	3	10	2	4·0
Epsom R.	7	3	5	4	4	23	4·6	2·6
Epsom	1	1	4	2	8	16	3·2	3·2
Sutton	9	5	11	4	2	31	6·2	4·1
Carshalton	1	2	4	3	5	15	3	5
Croydon R.	18	14	13	15	18	78	15·6	4·9
Reigate	5	4	7	17	5	38	7·6	2·9
Reigate R.	6	7	4	12	3	32	6·4	4
Godstone and Caterham	3	7	3	5	3	21	4·2	1·7
Croydon Boro'	46	119	51	66	55	337	67·4	5·3

TABLE C.—APPENDIX III. TO SECTION V.

TYPHOID FEVER—DEATHS.

DISTRICT	1895.	1896.	1897.	1898.	1899.	Total.	Average.	Death- Rate per 10,000 pop.
Barnes	2	0	1	3	2	8	1·6	·9
Richmond	6	5	2	3	2	18	3·6	1·2
Wimbledon	1	3	1	1	8	14	2·8	·7
Ham	0	0	0	0	0	0	0	0
Kingston	1	4	4	2	2	13	2·6	·8
Esher	0	0	1	1	1	3	·6	·7
Malden	1	0	2	0	1	4	·8	1·3
Surbiton	2	0	1	0	2	5	1·0	·8
Molesey	1	0	1	0	0	2	·4	·6
Chertsey	1	1	0	0	4	6	1·2	·9
Chertsey R.	0	0	0	0	0	0	0	0
Egham	1	1	1	1	0	4	·8	·7
Weybridge	0	0	0	0	1	1	·2	·4
Walton	1	0	1	0	0	2	·4	·4
Farnham	0	0	0	1	1	2	·4	·7
Farnham R.	2	1	0	1	1	5	1·0	·7
Frimley	0	2	0	1	0	3	·6	1·0
Hambledon	1	3	2	1	2	9	1·8	·9
Godalming	1	0	0	1	0	2	·4	·4
Guildford	0	0	0	1	1	2	·4	·2
Guildford R.	0	1	2	3	1	7	1·4	·6
Woking	0	1	2	2	0	5	1·0	·8
Dorking R.	0	0	2	0	0	2	·4	·4
Dorking	0	1	0	0	0	1	·2	·2
Leatherhead	0	0	1	0	0	1	·2	·4
Epsom R.	1	0	1	0	1	3	·6	·3
Epsom	0	0	0	1	2	3	·6	·6
Sutton	1	0	3	1	0	5	1·0	·7
Carshalton	1	1	0	1	2	5	1·0	1·7
Croydon R.	4	5	3	3	0	15	3·0	·9
Reigate	1	0	2	2	0	5	1·0	·4
Reigate R.	1	1	1	2	0	5	1·0	·6
Godstone	0	1	1	0	2	4	·8	·3
Croydon Boro'	14	18	9	11	10	62	12·4	1·0

VI.—DOMESTIC WATER SUPPLIES.

Under the above heading, matters affecting the Sanitation of the County in an important degree have to be referred to. In order that a continuous record may appear of the action taken to establish and apply certain principles of the administration it is desirable to give a brief but succinct narrative of the events of the year 1899.

Quantity of Public Water Supplies.—The corresponding section of the 1898 Report concluded with reference to “a most pressing and momentous question,” which not only concerned the future welfare of a growing residential part of the County, but also (by the measures proposed) involved the interests of other districts at a considerable distance. The provisions of the Woking Water Bill were there referred to. The position of a County Council in relation to such a question was admirably exemplified in this case. The Chairman of the Council convened and presided over several meetings of the various parties concerned. He succeeded in adjusting and reconciling the various claims for consideration, the diversity of which is apparent when they come to be stated under their respective heads in this Report. It was thus that the main object of the Bill—viz., a good and regular supply of water for a most growing residential part of the County—was, it is hoped, ultimately secured.

(a) *Protection of Local Water Supplies.*—The Woking Water Bill, 1899, as introduced into Parliament, enabled the Company to extend their water limits to additional parishes, and to sink wells, not only at Stoke-next-to-Guildford within

their area, but in the Greensand formation at Shere and Abinger. This proposal gave rise to local opposition from those who might thus have been deprived of their natural sources of supply. This opposition was supported by the County Council, and ultimately the scheme, so far as it related to the proposed supply from the Greensand, was withdrawn.

It will be noticed from previous Reports that the policy of the Council as exemplified in the case of the Aldershot Water Bill, 1896, has been consistent throughout in this respect.

Woking is not the only example which the record of 1899 affords of the essential help that can be given to a district and the County as a whole by a powerful Council. Sutton furnishes another case in point. The facts may be thus briefly stated in the words of Mr. Halsey, who, in representing the County Councils of England and Wales on an important occasion, clearly explained the grounds on which the County Councils Association were proceeding :—"At the town of Sutton, in his County, which was a district with a rapidly-growing population—small, of course, as compared with some manufacturing districts, but a district that had to be provided with a water supply—a Company had the work of supply in hand; and were giving general satisfaction. Recently, however, they heard that the Southwark and Vauxhall Water Company had purchased land in the locality, with the intention of constructing a deep well for the purpose of extracting underground water. They, in the County Council, had done what they could to protect their friends. Under ordinary circumstances, of course, the larger Company would not be able to avail themselves of the supply that would be obtained from their well, without meeting the opposition of the County and of various District

Councils in the matter of laying its mains along the roads. Recognising that fact, they proposed to obviate this formidable difficulty, and had arranged with the London, Brighton and South Coast Railway to take their mains along the Company's property. It was admitted that the Southwark and Vauxhall Company had a perfect right to purchase land, and to deprive the immediate neighbourhood of water, and his consultations with eminent lawyers on the subject had shown that Sutton had no remedy whatever. But since they had informed the Brighton Company of the attitude of the locality and County, and of the course they would pursue, he was happy to say they had refused to complete the bargain."—*County Council Times, February 23rd, 1900.*

It was expected that the discussion of this highly important question of the protection of local water supplies, in connection with the requirements of Sutton and East Surrey generally, would take place before a Committee of the Legislature during this Session. In anticipation thereof, the C.M.O.H. accordingly carried out an inquiry, with the co-operation of the officials of the Water Companies, throughout the whole of East Surrey (the district threatened), for the purpose of definitely ascertaining the extent to which the requirements of a sufficient and regular domestic water supply were already fulfilled, and the extent to which the existing sources of supply might be called upon for the needs of the districts concerned at present, or in the near future, that is to say—as the population increases, and sewerage systems come into operation. The results of these inquiries have been submitted to the Sanitary Committee, and illustrated by the six-inch ordnance maps, coloured so as to show at a glance not only the distribution of the main

water pipes, but also the towns, villages, groups of houses, and individual houses supplied with pipe water, and those that are still dependent on roof or subsoil water. These maps are on view at the County Hall.

The total number of houses the water supply of which has been thus inquired about is 21,244, viz : in the area of—

(1) Sutton Company	...	...	8191
(2) Woldingham Company	...	...	147
(3) East Surrey	„	...	12,906

Of this total 17,419 are already supplied from Company's mains, leaving a considerable margin, 4,825, still to be supplied. Furthermore, large additional supplies are likely to be required at Carshalton and Ewell, where sewerage systems are now being introduced. The conclusion arrived at by the C.M.O.H., is that all the water naturally belonging to the locality is required in the County.

As a Surrey "case" has practically been the means of bringing this very important question of the "Protection of Sources of Water Supply" within the sphere of practical politics, it may be opportune in this Report to indicate the nature of a scheme which would be likely to commend itself to those of the Council who are conversant with the subject.

A State department should have the power to constitute a "Water Protection Authority." Such Authority must comprise representatives of Administrative Counties in the first place, and then of the Municipalities and non-County Boroughs, other Councils, Urban and Rural, being represented by their members on the County Council. The powers and functions of such Authority would be to promote and oppose Bills, to

levy rates, and to protect sources of water supply, whether subterranean or on the surface. This last-named function would cover—

(1) Power to take action against waste (*e.g.*, the case of colliery proprietors) ;

(2) Power to compel Local Authorities and Water Companies to keep records, as suggested in Section 180 of Lord Balfour's Report ;

(3) Power to consent to water being taken from within the area for sale as water.

There would further need to be power to *create* water districts ; to ensure any locality within the district being supplied at reasonable rates by any Authority or Company taking water for sale from within the area ; and lastly, to secure existing undertakings from interference.

The above paragraphs primarily relate to the conservation of water supplies naturally stored in the substance of the earth, and which in a sense may be said to belong to the district in which it is practically lying at rest as a subterranean lake. In what follows here another phase of the subject comes under consideration. This was also connected with the provisions of the Woking Water Bill, 1899.

(b) *River Water Storage*.—The volume of water which collects in the substance of the water-bearing strata, and which constitutes the source of our subterranean supplies, represents a part only of that naturally belonging to the County. Some of the rain which falls on the districts where the sand is on the surface, a

larger portion of that which falls on the bare chalk area, and nearly the whole of what falls on the comparatively unabsorbent clay areas of the North and South of the County, passes away by water courses, brooks and streams to the river. This vast volume of water has been allowed to flow away to waste, and has increased the chances of destructive floods throughout the Thames Valley during years when there have been some grounds for complaint of insufficiency of supply, and many apprehensions for the future. That such has been, and is even now the case, results from the non-recognition hitherto of a most important fact, and to mistaken practice based upon imperfect knowledge.

The unrecognised fact has been that the somewhat "turbid water" of a swollen river, if stored for a sufficient length of time—that is to say, for *some weeks*—is just as fit to flow on to the filter beds, for further treatment, as is that of the "dry weather flow" of the same river when stored, as at present, for *some days*. The sedimentation and other processes by which the Thames water becomes partly self-purified is mainly a question of time and other favourable conditions. It is evident that the question of quantity of water necessary for the growing population south of the metropolis, admits of being solved by large increase of storage reservoirs. The idea of river-water being unfit for use, at times when it is full to overflowing, once set aside, and storage or impounding reservoirs of sufficient capacity provided, the old rules by which the daily abstraction of water was so strictly limited, lose much of their meaning. The really practical course is, clearly, to maintain the volume of water in the river at *all* seasons. This should be kept up to the standard demanded by the Thames Conservancy Board,

which is usually gauged by the flow over Teddington Weir, where the Upper Thames joins the Tidal River. The suggested limit is 200,000,000 gallons daily. Below this the volume of the river should not be allowed to fall by abstraction of water by the Companies at any time. Now the ordinary observer knows well enough that during the dry season, the volume of the water is such that it can ill afford to lose much; but he also knows during the wet seasons, after the first washings of the soil, &c., have passed away, depletion of the river by copious abstraction of water for storage, fairly high in the Thames Valley, would be a boon in every way. It is plain therefore, that by carrying out a judicious system of storing or impounding the water of the Thames the difficulty with which London and the neighbourhood has been threatened can be overcome, not only with safety but with collateral advantages.

In the report for 1896, pp. 86-7, the following opinion by the C.M.O.H. is given :—"As regards quantity of supply, I do not think there is reason for uneasiness in the County generally. But there is one rapidly-growing district (Woking) which may not unlikely need more water than can be found in the locality. The policy of the Council is to conserve County water sources for County use. There has just been noted a particular deficiency. Let it also be noted here that there are, to the best of my information, reserves of supply. I refer not only to the excess yielded by the more copious of the subterranean sources of the cretaceous formation, but also to the surplus river-water on which the County Companies in the Thames Valley have a right to draw."

In reading his notes on this subject, written after inquiry four years ago, the C.M.O.H. is able to refer with gratification

to the conclusions of the Second Royal Commission, recently published, which entirely confirm the opinion above stated.

On this occasion, he ventures to express the hope that the three Surrey River Water Companies, viz.—the West Surrey (intake at Walton Bridge), the Woking (intake at Chertsey), and the South-West Suburban (intake at Egham) all of whose intakes are *above* those of the London Companies at present—will not be slow to avail themselves of fresh possibilities to the advantage of the population in the County of Surrey, as well as their own.

In connection with the subject of waste of water and its prevention, it may be opportune to mention that during 1899 the C.M.O.H. had occasion to confer with Mr. William G. Peirce, Water Engineer for Richmond, and that through him he has become acquainted with the Auxiliary River Water Supply System now adopted in that town. This system enables ordinary river-water to be extensively used for certain purposes—watering of streets, &c.—greatly to the advantage of Richmond from an economic as well as the sanitary point of view.*

It may also be useful to recall the fact that the late Mr. Yool, former Chairman of the Sanitary Committee of the County Council, acting on behalf of Weybridge in 1893-4, successfully contended in the Law Courts for the right to use the ordinary river-water for flushing the outfall sewers instead of the comparatively costly filtered water of the Local Company.

* For full information on this subject, see "Auxiliary Town Supplies," *Transactions of British Association Waterworks Engineers*, June, 1899. By W. G. Peirce.

(c) *Intermittent Water Supplies.*—During the year 1899 the County Council has had under its consideration appeals from the District Councils of Kingston and Surbiton to interfere in their behalf, and to relieve them from inconvenience at present complained of from the irregularity and insufficiency of the Local public Water Service. As a result of communications and interviews with the Lambeth Water Co., the Council has been able to secure arrangements which, it is believed, have given satisfaction to the Authorities concerned. They are described in the last Report of the Sanitary Committee.

Quality of Potable Water Supplies.—In further discussing the subject of water supplies in relation to the public health, the quality of the water comes more particularly for consideration. In connection with the river sources of supply, grateful acknowledgment is first of all due to the Thames Conservancy (on which the Council is represented by Charles Burt, Esq., J.P., C.A.) and to the London County Council for their great work, the one in preventing river pollution above the intakes of the water, and the other in securing much better filtration of the water than was customary in former years.

In the Annual Reports, which the C.M.O.H. has had the honour to make to the Surrey County Council, he has taken occasion to insist that far too much stress has been laid, in some of the Official Reports, on the water-borne origin of Typhoid. Reasons have been given for looking to other causes which operate, he believes, far more generally in the production of outbreaks. But at the same time, the observations of Dr. Shirley Murphy, M.O.H. Admin. Co. of London, have been more than once referred to as most important and suggestive. The effect of his Reports, together with those of Professor Clowes,

the Chief Consulting Chemist to the L.C.C., has conducted to a better performance of their duty to the public by the Water Companies, especially by the provision of additional area of filtration work. In this way they have proved beneficial to the public in Surrey, as well as in the Metropolis.

The control of Water Companies in respect of the efficiency of filtration may be in part direct—that is to say, by securing sufficient storage reservoirs and area for filtration, together with the right on the part of properly constituted authorities to make inspection of the works, to enforce essential requirements. But the way in which the work of filtration is actually carried out by the employees of the Companies can only be controlled indirectly by observing and testing the results by physical, chemical and biological examination of the filtered water. A standard of purity based on the number of microbes is, like many other tests, fallacious, for reasons already given in these Annual Reports. But the test of the number of microbes present in a cubic centimetre (equal to about fifteen drops of water) is valuable as a check on the efficacy of filtration. The maximum limit of 100 has been laid down by no less a scientific authority than Koch of Berlin, and it is satisfactory to know from Dr. Percy Frankland (another leading authority in this country) that the standard so used is regarded as reasonable.

As long as there is the slightest possibility of harm to a population by water-borne Typhoid, and even though the harm be small compared with that inflicted on the same population by other well-known causes of this preventable disease, ample reasons exist for exercising close supervision of the Companies. It may be added that supervision is of course just as necessary in the case of the Companies outside the Metropolis, as of those whose chief area of supply is within.

During the year the County Council, as the central intelligence department, has been favoured with copies of analyses and reports made to District Councils by Medical Officers of Health and Laboratory Experts. Some of these have been obtained at the instance of the C.M.O.H., as, for example, those relating to the water of the Sutton Company by Alex. G. Foulerton, Esq., F.R.C.S., D.P.H., Professor of Bacteriology at the Middlesex Hospital.

(d) *Analyses*.—Samples of their waters have been forwarded to the Council from the following Authorities and Companies :

Epsom District Council.

Godstone „ „

Richmond Corporation.

East Surrey Company.

Woldingham „

Lympsfeld and Oxted Company,

Cranleigh,

And some others.

The following paragraph, taken from the Annual Report of Dr. Jacob on Weybridge, goes to show the good effect skilled supervision may have in the case of a river company's supply :

“During the year I made a chemical examination of 12 samples of the West Surrey Company's water, which were taken every month from one of the public drinking fountains, with the results set out below.”

“Four samples of the Company's water were also sent to the Jenner Institute of Preventive Medicine for bacteriological examination, of which two were reported to be satisfactory, and two were not so free from objectionable micro-organisms as they ought to be. (See also the following tables :—)”

Table showing Results of the Chemical Examination of the West Surrey Company's Water.

When the Samples were taken.	Where the Samples were taken.	Appearance of the Water.	Microscopic Examination of Sediment showed	Grains per Gallon.			Parts per Million.		
				Chlorine as Chlorides.	Oxygen required to Oxidise.	Hardness.	Total Solids.	Free Ammonia.	Albuminoid Ammonia.
1899.									
January 24th	M. G. H.	Clear	Nothing	1·35	·132	13½	22¼	·02	18
"	Y. M. H.	"	"	1·35	·12	—	—	—	—
February 24th	Y. M. H.	Fairly clear	"	1·35	·086	14½	22½	·02	·11
March 6th	M. G. H.	"	"	1·35	·036	15½	20	None	05
April 24th	M. G. H.	"	"	1·4	·056	—	—	·02	08
May 30th	M. G. H.	"	"	1·4	·034	14	18	·02	095
June 28th	M. G. H.	"	"	1·35	·049	14	18¼	None	·09
July 27th	M. G. H.	"	"	1·4	·044	13	17	None	07
August 31st	M. G. H.	"	"	1·5	·053	—	17	None	·09
September 29th....	M. G. H.	"	"	1·45	·036	13	17	·01	09
October 23rd	Y. M. H.	V. S. T.	"	1·4	·033	—	18	·02	·08
November 29th	Y. M. H.	V. S. T.	"	1·65	·075	17	24	·015	12
December 19th	M. G. H.	Clear	"	1·55	·036	16	24	·03	·10
"	"	"	"	"	"	"	"	"	,

NOTE.—Y. M. F. means Yool Memorial Fountain.
M. G. F. means Monument Green Fountain.

S. T. means Slightly Turbid.
V. S. T. means Very Slightly Turbid.

Table showing Results of the Bacteriological Examination of
the West Surrey Company's Water.

When the Sample was taken.	Where the Sample was taken.	Average number of Bacteria contained in 1 cubic centimetre (about $\frac{1}{4}$ teaspoonful) of the Water.	Proportion of Bacteria which liquify the medium to those that do not so act.	The Examination for bacteria, which might by their presence indicate the possibility of sewage contamination, gave
1899.				
January 24th	M. G. F.	300	33 per cent.	Bacilli coli com. found.
March 6th	Ditto	176	4 per cent.	Ditto.
April 24th	Ditto	50	—	A negative result.
December 19th ..	Ditto	600	50 per cent.	Ditto.
”	”	”	”	”

Weybridge Urban District,
Fifth Annual Report, E. L. JACOB.

Representations to the Company made early in the year seemed to have had good effect, as shown by the improvement visible in the columns headed respectively “Organic ammonia” and “Oxygen absorbed,” as well as in the reduction of microbes. The results, however, of further analyses in December seem to show that supervision cannot be safely relaxed.*

* At the meeting at which this Report is presented further analyses are forwarded to the County Council, with letters, from the District Councils of Weybridge and Chertsey. These will require careful consideration.
C.M.O.H

Dr. Jacob has also contributed an extremely valuable report on the Sutton Water Supply, which has been under his skilled supervision for a quarter of a century. This Report appears *in extenso* in the February Quarterly Volume, 1899, pp. 77-80.

(e) *Inspection of Gathering Grounds of Public Water Supplies.*—The Council recognise the value of these analyses, especially in those cases where variation in the character of the water has been observed. But they attach even greater importance to an intimate knowledge of local circumstances which comes to Medical Officers of Health in the exercise of their profession, and which may be supplemented by careful detailed inspection of the gathering grounds of the supplies.

It must be remembered that the two conspicuous instances of water-borne epidemics during the last decade have been furnished, not by river-water supplies, the contamination of which is obvious to all, and which it appears can be effectually guarded against, but (as at Worthing and Maidstone) from sources of pollution beneath the surface of the soil. Springs and wells which are so liable to contamination are much more the subject of investigation and report now than formerly.

Dr. Jacob is able to speak with the greatest authority on many questions which are important, not only to his own districts, but to those of the County at large. The Report on the Sutton Water Supply, above referred to, embraces nearly every aspect of this complex question of water examination. It may be referred to as a model Report of the kind which is looked for at the present time from Medical Officers of Health, who are the officials responsible to the public if any untoward event should occur.

The Sutton supply affects about 35,000 persons in the East of the County, including the populations of many growing districts round Croydon—viz., Morden, Ewell, Carshalton, &c. To the South-East are the sources of supply of the East Surrey Company, which affect a still larger population—about 50,000 persons, including that of the populous and growing town of Redhill. It is plain that neither the District Councils concerned, nor the County Council, which is always at their back, can ignore certain possible sources of pollution of these water supplies, and they are therefore bound to be constantly pressing for an abandonment of the dangerous system of soak-away cesspits, which is still permitted to continue in the area from which the Kenley Wells of the Company derive their supply.

Both the last-mentioned supplies are from the chalk formation. Further east of the County is the Lympsfield Water Company's supply from the springs of the lower Greensand formation. These sources of supply always need close supervision when there is a possibility of leaking sewers and cess-pools close at hand. It is satisfactory to know that the Godstone District Council, with the advice of Dr. Oldman, the M.O.H., and with the assistance of Mr. Barralet, the Sanitary Inspector, are keeping close watch, and having expert analyses made when necessary.

It is also very satisfactory to record that at Farnham, Dr. Sloman, for the Urban District, and Dr. Lorimer, for the Rural District, have made a joint inspection and report of the gathering ground of one part of the Farnham Company's supply, with useful results. Their Report was forwarded to the County

Council, and will, in due course, be fully commented upon, with the valuable assistance which the Consulting Engineer to the Company, A. C. Pain, Esq., who happens to be a Member of the Sanitary Committee, has kindly promised.

The supply of this Company is considered apart from other spring and subsoil waters, inasmuch as, owing to the presence of iron flocculent matter, it has to be filtered like river water.

The gathering ground of the Wey Valley Company's supply, at Hindhead, will next require inspection and report by Dr. Lorimer and others concerned. Such report might give an exact account of the way in which the solid and liquid refuse of every house (within a mile radius) is disposed of.

It will be remembered that part of the supply from Richmond is derived from a subsoil source, Petersham Well. The C.M.O.H. was consulted by the Corporation and those officially concerned with regard to a letter from the Local Government Board, respecting some objections raised by a ratepayer to the Petersham supply.

Another source, which appears to demand attention, is that of the Godalming new supply. With regard to this, Dr. Parson, the M.O.H. for the Borough, in his commendably brief but pithy Annual Report, says :—

“I have to call attention to what is called and known as the Bore-Hole in Peperharow Road, one of the sources of water supply to the reservoir, and its proximity to the Charterhouse Sewage Ground. The Borough Surveyor has kindly furnished me with a plan which shows the site of the Bore-Hole and its

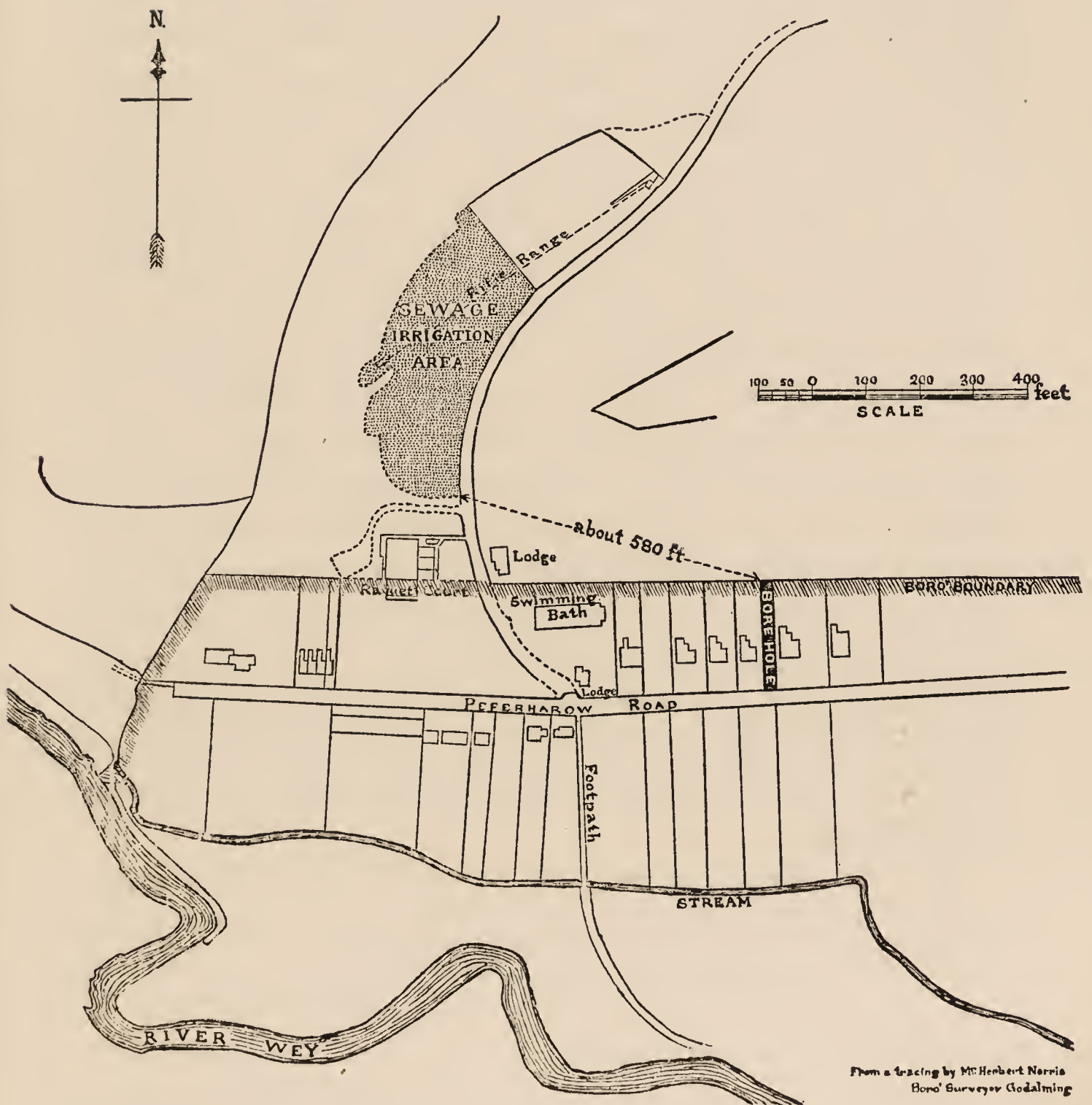
surroundings. The distance from the sewage field is about 580 feet, and I am of opinion that it constitutes a possible danger to the water supply."

With regard to the same matter, Surgeon-Col. Lake, in whose District Charterhouse School is situate, reports to the Rural Council as follows:—

"Complaints having been made in June respecting the above, I was requested by the authorities of the School to inspect the area and advise as to the best course to be pursued. The subject being one of great importance to the public health and sanitary condition of the neighbourhood, I thought it advisable that the County Medical Officer of Health should also be requested to advise. We accordingly visited the area together, in August, and jointly made certain recommendations to the Charterhouse authority for the safe disposal of the sewage, which we trusted would soon be adopted. Nothing further, however, had been heard on the subject from this quarter up to the end of the year."

The C.M.O.H. would merely add to this, by way of comment on the above, a diagram prepared by Mr. Norris, the Borough Surveyor of Godalming. He would reiterate his opinion expressed on the spot, when he had the pleasure of meeting Dr. Rendall, Head Master of Charterhouse School, in August, 1899, that the matter is one that cannot be safely disregarded.

DIAGRAM—GODALMING WATER SUPPLY.



VII.—SANITATION OF DWELLINGS.

In the Report for 1898 the great importance of this subject was dwelt upon, and a feeling of disappointment was expressed that some of the districts in Surrey compared unfavourably with the Metropolis in respect of this department of work. The extent to which diseases (preventable by the exercise of the ordinary powers of the Public Health Act relating to nuisances) prevail, depends largely upon the character of this work. In some districts of the County it is becoming very thorough, but in others it is still perfunctory. No doubt it partly rests with the Medical Officers of Health to see that the powers entrusted to the Sanitary Authority are carried out efficiently, and that proper appointments are made for the purpose. But it is useless to ignore the fact that whether this department is a reality or otherwise must depend mainly on the District Council itself. This, which is the local governing body, is in its turn dependent on the kind of public feeling or opinion existing in the District. It is therefore by informing the public as completely as possible on the essential parts of the subject that it is hoped to arouse attention, and to create interest where it is needed, and so indirectly to secure improvement.

The best way of carrying out this object will be to give a synopsis of the work of the several Districts, with notes by the C.M.O.H. when needed. The District Reports are all open to inspection, and any further explanations that may be required will be forthcoming.

Barnes.—Medical Officer of Health Report contains general statements with a few details. Sanitary Inspector gives list of 292 “Nuisance Notices” sent out.

Richmond.—Medical Officer of Health reports : “ In addition to the ordinary inspections upon complaint and otherwise in the regular routine, ‘ *Systematic Inspections* ’ have been made, comprising a complete sanitary survey of all the houses and premises in 34 different streets or places, where the houses are of the class liable at short intervals to get out of order and repair. The very important work of superintending all reconstructions of house drains falls within the duties of the Nuisances Inspector; 105 cases of this kind have been dealt with, and 58 of these were of a character to require careful supervision, and much time and attention to ensure compliance with details. In addition to these the drains of 90 houses were chemically tested, of which number 40 only were found defective. No instance has arisen in which it has been necessary to enforce obedience by summons, as in all cases the requirements were satisfied without legal proceedings being taken.” The Tabular Statement of the Sanitary Inspector gives the total number of Notices sent as 1421.

Wimbledon.—The Medical Officer of Health’s Report contains detailed accounts of sanitary improvements, which appear to be very thorough, on 215 houses. The localities are mentioned, and particulars of proceedings are given. The whole Report is very satisfactory.

Ham.—The Medical Officer of Health makes visits to the district several times a year and reports thereon.

Kingston.—The Report of the Medical Officer of Health on the Inspection of the District is as follows : “ I have personally done a large amount of inspection work in the course of my various inquiries, but the important house-to-

house inspection has not yet been begun, as the Inspector has no time to spare from his multifarious duties as Buildings, Markets, Explosives, Common Lodging Houses, and Canal Boats Inspector. In Surbiton, with one-third our population, there is a Sanitary Inspector devoting the whole of his time to his work under the Medical Officer, and in consequence nearly all the older houses have now been re-drained and brought up to present-day sanitary requirements." The Sanitary Inspector's "Abstract of Notices" merely consists of a classified table without any particulars as to localities or further information.

Esher and Dittons.—Under the heading "General Sanitary Condition," the Report of the Medical Officer of Health specifies a few improvements. The "Abstract of Notices" attached consists of a classified table only.

Malden and Coombe.—The Summary of Nuisances attached to the Report of the Medical Officer of Health consists of a classified table only by the Sanitary Inspector (who is also Surveyor).

Surbiton.—A great and salutary change has taken place in this District since attention was first directed to the importance of House Sanitation by *The Lancet* and *The Surrey Comet*, in 1892. The Sanitary Inspector gives an excellent detailed report of the permanent improvement of 228 houses during the year. The Medical Officer of Health endorses the report, and gives the following typical example of conditions found and remedied: "The block of 14 houses, known as Well's Cottages, situate in the Retreat and King Charles' Road, have been re-drained by the Council in default of the owners not complying with the notices served. When the drains were opened up

they were found to be in a most dangerous condition, being imperfectly jointed with clay, laid with irregular falls, and partly choked; they were also in direct communication with the public sewer and unventilated. The water closets were also defective, and when removed large accumulations of filth were found under the floors."

East and West Molesey.—The Medical Officer of Health comments on the able and conscientious work of the Sanitary Inspector (who is also Surveyor). The report is deficient in some respects, but on the whole is very satisfactory. In the report for 1898, p. 113, the C.M.O.H. referred to the excellent work of the Surveyor to the District Council, in carrying out the connection of old houses and existing premises with the main sewers. It should be specially mentioned in this report that the house drainage is always inspected and tested by the Surveyor, and, if necessary, it is reconstructed under his supervision before the connection is allowed to be made. In no case are old house drains allowed to be connected with new sewers, unless they are known to be satisfactory throughout.

Chertsey Urban.—The Medical Officer of Health refers to this work as set out in the Sanitary Inspector's Report. The Report of the Inspector was only just received on the date of the Committee meeting (April 10th, 1900). It contains a full account of work during nine months, under the "Public Health" and "Housing of the Working Classes" Acts.

Chertsey Rural.—No special report of sanitary inspection.

Egham.—Mr. Menzies, the Sanitary Inspector (who is also Surveyor and Architect for the District), makes a return, which

appears in Dr. Woodforde's report, of 204 premises inspected. 78 nuisances (for the most part of a routine character) were discovered, and 63 abated before the end of the year.

Weybridge.—The Medical Officer of Health reports as to nuisances : “ The Inspectors' return of nuisances discovered and abated, and of other work done, is given on a separate page.”

Walton.—The Medical Officer of Health reports as to “ systematic inspection ” that the details appear in the Sanitary Inspector's Report. This consists of the usual classified table.

Farnham.—The Medical Officer of Health is able to give the following satisfactory report : “ I can report that during the year 42 more houses have had water laid on for flushing purposes, and that 23 houses, previously without proper supply, have had town water laid on. Owing principally to the activity of your Surveyor, several houses have been brought under my notice which I have considered to be in such a bad state of repair or so bad from a sanitary point of view as to be unfit for habitation, and great improvement has resulted from the Council's action in sending notice to the owners to put them in proper repair. Houses in Bromley's Yard and adjoining houses in East Street ; one house and an old ruinous store have been pulled down and the condition of the others much improved. The Fox Inn, West Street ; a considerable part of the outbuildings here, which were in very bad sanitary condition, were pulled down and built up again on a much more satisfactory plan. Babs Mead ; the conditions here have been much improved, and when the work which the Council are undertaking, and some further work done by the owner, are carried out, the result will, I hope, be satisfactory. The

tenant (Mrs. Blackman) has at last been turned out of the house in Abbey Street, which has been condemned twice or three times. 91, East Street, was in very bad condition, and has been put in fair repair. The cottage in Hart's Yard, condemned as unfit, is now not inhabited. The repairs of the four cottages on the west side of Factory Yard has been commenced. 29, Downing Street: The repairs to this property necessary to render it habitable are in hand. Three cottages at Beavers Kilns and four on the west side of Potter's Yard were condemned in December, but the notices have not yet expired, and they remain to be dealt with."

Farnham Rural.—The Medical Officer of Health refers to the work of the Sanitary Inspector being carried out on ordinary lines.

Frimley.—Systematic house inspection reported on as "commenced."

Hambledon.—The Sanitary Inspector makes the following report: "I have the honour to report that during the year 1899 the number of nuisances abated is 139. The number for each parish separately is given. Proceedings have been taken before the magistrates in five cases, one at Bramley, one at Elstead, one at Shalford and one at Wonersh. Two cottages have been closed as unfit for human habitation, one at Cranleigh and one at Wonersh. Several cases of overcrowding have been remedied, one bad case at Shalford, one at Bramley and one at Elstead. One dangerous sand pit, at Haslemere, has been fenced and made safe. A few samples of water have been analysed and dealt with as circumstances required."

Godalming. — Charterhouse sewage area reported on specially. Attention is also called to cases which ought to be treated at the workhouse infirmary.

Guildford.—The work of the Sanitary Inspector is referred to by the Medical Officer of Health as admirable. It includes the supervision of 167 more houses which have become connected with the Sewerage system during the year. This brings up the whole number of “houses connected” to 3,244 out of a total of 3,378 in the Borough. The rest of the work of the Inspector is set out in the usual tabular form.

Guildford Rural.—The newly-appointed Sanitary Inspector (who is also Surveyor) reports as follows: “During my term of office the whole of the district has been inspected and the various parishes visited from time to time, and wherever sanitary defects have been noted, prompt action has been taken under the provisions of the Public Health Act, 1875, or other Acts relating thereto. Out of the 130 Preliminary Notices served, 16 have been reported as not complied with, and in each case the Council issued the usual statutory notice. In two cases proceedings were taken before the justices by order of the Council, and in each case an order was made upon the defendants to do the necessary work and to pay the costs of the proceedings; also in one case, taken under the Public Health (Water) Act, 1878, a fine of forty shillings was inflicted.” Compared with some other Districts this report reads fairly satisfactory.

Woking.—The following work is specially reported by the Medical Officer of Health. “During the year 8 houses were represented to you as being unfit for human habitation—

namely, No. 8, Victoria Terrace, Knaphill, which has now been put in habitable condition. Three cottages, occupied by Messrs. Barnes, Collyer, and Annett, in the Monument Road, the owner of which preferred to close them rather than put them in thorough repair. Nos. 1, 2, 3 and 4, York Cottages, Church Street, the owner not complying with the Notice, proceedings were ordered to be taken before the Justices for a Closing Order. This was granted, and they further ordered five shillings to be paid to each tenant as removal expenses. In addition, notice was served upon the owner of the Thatched Cottage, Maybury Hill, under the Public Health Act, 1875, to close or thoroughly repair the house. The premises were closed, but after undergoing extensive alterations have since been re-opened." This Report is also satisfactory in respect of details given. The usual tabular statement of the Sanitary Inspector is appended. The office is now distinct from that of Surveyor.

Dorking Rural.—The Medical Officer of Health refers to the return of the Sanitary Inspector (who is also Surveyor). The usual classified table appears, but it is significant that the Medical Officer of Health further reports that "the service of Notices for the abatement of some nuisances was deferred till after the question of providing sewers in certain places is settled." This entirely bears out what has been said in another part of this Annual Report as to the disadvantages of the system of combining the two offices in one. There can be nothing invidious in the C.M.O.H. calling attention to it in this instance, as he has already had the pleasure of drawing the attention of the Committee to the excellent detailed work of another kind by the Officer now referred to—viz., Mr. Rapley, junior.

Dorking Town.—The Sanitary Inspector (who is also Surveyor) sends a statement to the Medical Officer of Health relating to 258 nuisances discovered, some of which are noted by the Medical Officer of Health as having engaged the attention of the District Council. It is in the usual tabular form.

Leatherhead.—The Medical Officer of Health reports as to nuisances discovered by himself and his deputy (Dr. Williamson). The name of the Inspector does not appear. It is not clear whether the office is covered by that of the Surveyor, as is very often the case.

Epsom Rural.—The Medical Officer of Health reports on special nuisances : (1) Little Heath Brickfield ; (2) Recurring cesspool nuisances at Ewell. The Sanitary Inspector's Report is attached in the usual tabular form.

Epsom.—The Sanitary Inspector's statement to the Medical Officer of Health consists of the usual table. No further particulars.

Sutton.—The Medical Officer of Health reports that nuisances from brickfields specially engaged attention. The Sanitary Inspector's Report is in the usual tabular form.

Carshalton.—The Medical Officer of Health reports the systematic inspection of cottages, and many defects of dwellings as well as of drains and closets remedied. Sanitary Inspector's usual table appended.

Croydon Rural.—Under the heading "Inspector's Work," Dr. Fegen, the Medical Officer of Health, gives a complete summary of the business of his department. The accomplishment

of this work involved no less than 5240 visits. This District furnishes a typical example of good Departmental work, organized and supervised by the Medical Officer of Health. Dr. Darra-Mair has the chief credit of this organization work, the C.M.O.H. having freely given him all the help he could at its start and during its continuance. The importance attached to service of this kind by the Local Government Board is testified to by the fact of Dr. Mair's appointment on the Staff.

Reigate.—The Medical Officer of Health refers to the Report of the Sanitary Inspector (which appears separately) in the following passage: "Statistics as to the nuisances (including houses unfit for human habitation) that were dealt with, as to the removal of bodies to the mortuary, as to the inspection of slaughter-houses, of cow-sheds, dairies and milk-shops, of workshops and of common lodging houses, and as to proceedings under the Sale of Food and Drugs Act, will be found in the Sanitary Inspector's Report for the year." Contrary to the general rule, the Inspector's Report does not appear at all in connection with that of the Medical Officer of Health.

Reigate Rural.—Nuisances from brick-burning specially mentioned. No Report of any kind appears from the Sanitary Inspector.

Godstone.—Appended to the Report of the Medical Officer of Health are carefully prepared tables, which indicate the assiduity with which the Sanitary Inspector (who is also Surveyor) performs his duties.

Caterham.—The Medical Officer of Health reports notices served by Sanitary Inspector (who is also Surveyor), as to sanitary defects and nuisances, on the owners of 195 houses and premises. No further particulars are given.

VIII.—COW-HOUSE AND DAIRY SANITATION.

The C.M.O.H. has prepared a synopsis of the work carried out under the above head by the Sanitary Authorities of the County. He regrets to say that the account of the Cow-shed and Dairy sanitation of the County is decidedly meagre. Having regard to the public interest that is now being taken in the subject, it might have been expected that better evidence of activity on the part of responsible Authorities would have been forthcoming. Nowadays the Authorities in London and the great towns are inquiring closely into the character of the milk which is being sent from the country, and they are becoming very suspicious of the reality of the supervision said to be exercised over the insanitary premises in which it is believed that a large proportion of the milch cows are housed. If for no other reason than to avoid outside legislative interference, it would be well for our District Authorities to bestir themselves.

The absence of full accounts in the Reports of Surrey Medical Officers this year may, however, be due to a misunderstanding arising out of the amended Order of the Local Government Board, in which specific reference is made to the power of a District Council to appoint a Veterinary Inspector. But this appointment is for the purpose of detecting the presence of disease amongst the cows, and not for the purpose of improving their sanitation, which is the way to *prevent* the occurrence of disease. This duty, as before, rests with the Sanitary Inspector, whose action should be guided by the Medical Officer of Health. This department of preventive work may be arranged under three headings :—

- (1) Sterilization of milk at the dairy, or at home by boiling, or by the means recommended by technical lecturers.
- (2) Examination of cows by a Veterinary Inspector. This appears to have only been carried out at one place—Epsom—where it is somewhat obscurely reported that certain cows were “got rid of.”
- (3) The sanitary improvement of cow-sheds. This measure is at the same time the most radical and effectual from a preventive point of view. By diminishing Tuberculosis among cattle, it must in the long run prove beneficial to the owners of cattle and the consumers of raw milk.

The following Report by Dr. Senior, on the Cow-houses or Cow-sheds of the district of Esher and the Dittons, seems to show that Medical Officers of Health are alive to the importance of the subject, although they may not be confident that their advice will be followed:—

“I have made inspections of these during the year and find that while the majority are well kept and cleansed as they should be, there are still some which are badly constructed. These are mostly wooden sheds and have scarcely any proper means of ventilation or lighting; in fact they are not suitable for keeping cows in, and not by any means in accordance with the bye-laws that are in force in this district. These bye-laws exist for the purpose of requiring and obtaining proper lighting, ventilation and good hygienic surroundings for cattle, and I am convinced that the Council would do wisely in enforcing these bye-laws. The advantages gained would be two-fold, in the first place the cattle would be placed under better hygienic conditions and would be less liable to disease, especially Tuberculosis, and

in this way the inhabitants of the district would be the gainers, as there are several diseases that can be conveyed from the bovine to the human species by milk. In the second place the district generally would be the gainer, as the quality of milk produced would be so much improved as well as the quantity increased. I may add that in some parts of Cheshire where similar bye-laws have been enforced, it has been found that the quality and quantity of the milk at once began to improve. I shall have occasion during the present year to bring before your notice such of the cow-sheds as are not suitable for keeping cattle in, and I venture to hope that steps may be taken to improve their condition."

Barnes.—The Medical Officer of Health reports: "I have inspected the milk-shops, dairies, slaughter-houses, and bake-houses, and found them generally satisfactory—the underground bake-houses give the most trouble." Sanitary Inspector merely gives number of Registered Places as 13. Nothing further.

Richmond.—The Medical Officer of Health reports: "The dairies and milk-shops, which are also under special regulations made in 1887, have been inspected from time to time with a view to the regular enforcement of the rules, and any infringement thereof has been corrected." But the Report of the Medical Officer of Health on the Summary of the Sanitary Inspector contains no details of inspection or any action taken.

Wimbledon.—The Report of the Medical Officer of Health contains the following statement, which shows that there is some real supervision of dairies, &c. No doubt the intelligent and active Inspector (Mr. Johnson) will soon extend this

department of work: "The dairies, cow-sheds and milk-shops have been inspected from time to time during the year, and generally found to be kept in accordance with the regulations. There are now 46 of those premises in the district, 10 having been registered during the year. In three cases notices were given for the cleansing of milk utensils. At two other milk-shops the drains were reconstructed. In one instance, a fatal case of Diphtheria having occurred, the business was transferred elsewhere until after the disinfection and thorough cleansing of the premises was carried out. The milkmen were warned against leaving milk cans at houses where cases of infectious disease occurred, the occupiers being requested to place their jugs outside the door, into which the milk could be poured direct."

Ham.—Dairies (? how many, and where situated), inspected once a quarter.

Kingston.—The only information (contained in Abstract of Notices of the Sanitary Inspector), consists of the following statement: "The slaughter-houses, cow-sheds, dairies and milkshops have been visited at various times, and found in a fairly satisfactory condition."

Esher and Dittons.—The Abstract of Notices attached to the Report of the Sanitary Inspector gives the number of dairies and cow-sheds inspected as 8.

Malden and Coombe.—The Sanitary Inspector reports cow-sheds, dairies, and milk-shops as regularly inspected, and generally kept in good condition.

Surbiton.—The Sanitary Inspector's Report contains the following definite statement: "One cow-shed was found to be defective in regard to air space, ventilation, drainage and

water supply. Notice has been given the owner to provide accommodation and also to amend the drainage, &c., which he has promised to do as early as possible."

East and West Molesey.—The Medical Officer of Health gives only such information as is contained in the general statement: "The dairies, bake-houses, and slaughter-houses have been inspected periodically and are generally in good order and well-kept."

Chertsey.—The Medical Officer of Health refers to results of inspection as set out in the Report of the Inspector, Mr. Thomas. That officer makes the following important statement:—"I have visited nearly the whole of the Dairies and Cow-sheds, but have deferred taking, or recommending, any action to be taken, until your new Regulations were in force. With the new year I am commencing a systematic visitation of all Cow-sheds, but my knowledge (gained from previous visits) leads me to state that most all these places are *very* far from being in a Sanitary state, and I only know of *two* that will conform to the new Regulations, so that a rigid enforcement is the only way to prevent their becoming obsolete. The conditions under which some of the cattle are kept, and the yards adjoining the sheds, are disgusting."

Chertsey Rural.—The Report of the Medical Officer of Health contains the following passage: "In March the District Council received from the Local Government Board (*a*) copies of the Dairies, Cow-sheds and Milk-shops Order of 1899, by which such disease of the *udder* of the cow as shall be certified by a veterinary surgeon to be *tubercular* was added to the list of diseases which were declared by the Order of 1885 to render the milk of a diseased cow unfit for human consumption; (*b*)

copies of the Model Regulations as to cow-sheds, dairies and milk-shops which the Board had drafted for the guidance of Councils; and (c) a copy of a circular which the Board had prepared, explaining the provisions of the Order of 1899, and of the Model Regulations, and stating that it will be competent for the Council to employ and pay a veterinary surgeon to examine the cows of the registered cow-keepers, with a view to obtaining a certificate from him as to any cows that are suffering from tubercular disease of the udder. The Council had already made Regulations under the Order of 1885, and decided not to take any further steps in the matter at present." Similar passages appear in the Reports of other districts of Dr. Jacob.

Egham.—Dr. Woodforde writes: "Cow-sheds and Milk Shops (8) have been inspected." Nothing more.

Weybridge.—The Inspector informs the Medical Officer of Health that there are 8 registered premises, and the number of cow-sheds found in a foul state was 0.

Walton.—Medical Officer of Health reports Model Regulations adopted. The account of the "results" appears to have been accidentally omitted from the Sanitary Inspector's Report.

Farnham.—The Medical Officer of Health is able to give the following satisfactory report: "About the beginning of December I inspected the cow-sheds and dairies in the town, and found them in most cases to be not quite in accordance with the Regulations. These only came into force in November, and it was found that the owners had not received copies. The Council decided to send copies to each owner and request compliance, and at the same time gave instructions that their

premises should be inspected again and reported upon at a later date. At my suggestion the Council wrote to the Rural District Council, asking if they would approve joint inspections by the Medical Officers of the Rural and Urban Districts of the Dairies and Cow-sheds in both districts, on the same lines as those upon which the joint inspection of water has been already carried out. But they did not see their way to agree to this."

Farnham Rural.—The proposal for a "joint inspection" referred to above is reported.

Godalming.—No report under this head.

Guildford.—The only reference to this department of public health work is that contained in the usual tabular statement of the Inspector, who reports "36 visits to Bakehouses and Dairies."

Guildford Rural.—The Medical Officer of Health gives the usual tabulated statements, showing 88 premises registered. Only 3 structurally improved.

Woking.—The Medical Officer of Health reports as follows : "*Dairies, Cow-sheds, and Milk-shops Amending Order of 1899.*—This Order may be cited as 'The Dairies, Cow-sheds, and Milk-shops Order of 1899.' (a.) Article 15 of the Order shall be altered so that, for the purposes of the provisions of paragraphs (a) and (b) thereof the expressions in the said Article which refer to disease shall include, in the case of a cow, such disease of the udder as shall be certified by a veterinary surgeon to be tubercular; and the Order and the Amending Order shall apply and be construed with the modifications necessary to give effect to this Article. (b.) The Local Government Board think that it will be competent for the Council to employ and pay a Veterinary Surgeon with a view to obtaining a certificate under

the Article, as amended, or to appoint him as an officer if they think fit to do so. (c.) The Council have instructed the Inspector that whenever it appears to him that any cow in any dairy is suffering from tubercular disease of the udder, that Mr. A. C. Wild, M.R.C.V.S., the Veterinary Surgeon appointed by the Council, be requested to visit forthwith, with a view to obtaining a certificate under the Order. I am pleased to state that the Council at the close of the year have under their consideration the advisability of the periodical inspection of milch cows in the District by their Veterinary Inspector."

Dorking Rural.—The Medical Officer of Health reports: "Model Regulations adopted." Sanitary Inspector gives number of registered premises as 50. One only was structurally improved. Three were reported "unclean."

Dorking.—Sanitary Inspector sends Medical Officer of Health return of 24 registered places. Improvements none.

Leatherhead.—The Inspector informs Medical Officer of Health that the premises of the registered cow-keepers and purveyors of milk "were regularly inspected during the year." No particulars.

Epsom Rural.—No Report from the Inspector.

Epsom.—Medical Officer of Health reports as follows: "Mr. Skilton, M.R.C.V.S., the Inspector of Cow-sheds, Dairies, and Milk-shops, informs me, as the result of his inspection of the cows of the registered cow-keepers in the district, that he found two cows which were suffering from a disease of the udder which was probably tuberculous, and that these were promptly 'got rid of' by their owners."

Sutton.—Inspector of Dairies, Cow-sheds and Milk-shops, makes a return of 17 premises; one was structurally improved, and one was found dirty.

Carshalton.—Medical Officer of Health refers to premises as having been inspected, but there is nothing at all in the Report of the Sanitary Inspector.

Croydon Rural.—The Report of the Medical Officer of Health contains the following details, which show that real supervision is exercised in this district: “There were 70 premises registered under the Dairies, Cow-sheds and Milk-shops Order at the end of the year, as compared with 70 in 1898, 67 in 1897, and 63 in 1896.

“They are distributed as follows:—

Addington	...	1	Mitcham	...	21
Beddington	...	6	Morden	...	2
Coulsdon	...	14	Sanderstead	...	5
Merton ...	...	10	Wallington	...	11

“Repeated visits have been paid to all by your Officers, and where complaint was made by them with regard to uncleanness or other neglect of the regulations, remedial measures were at once adopted by the occupiers, except in one case where legal proceedings resulted in a substantial fine being imposed.”

Reigate.—Medical Officer of Health reports: “Statistics * * * * as to Inspection of Cowsheds * * * * will be found in the Sanitary Inspector’s Report for the year.

Reigate Rural.—The Medical Officer of Health reports that the Council, adopted the Model Regulations in lieu of those which already in force in the district, and sent copies of them and of were the Order of 1899 to the registered cow-keepers and purveyors of milk. They have not, as yet, engaged a Veterinary Surgeon to examine the cows and to certify as to any that have tubercular disease of the udder.” A paragraph similar to this appears in other reports for 1899 by Dr. Jacob.

Godstone.—The Report of the Medical Officer of Health contains the following particulars, which show that good work is going on: “There are 58 registered dairies and cow-sheds in the district, many of which are kept in a highly efficient state, though in some in the southern part of the district the water supply is defective. Proceedings were taken in the case of a cow-keeper at Crowhurst, whose sheds were in an exceedingly dirty and dilapidated state, and a conviction was obtained. New Bye-Laws have been adopted, and printed cards of regulation have been supplied to the registered cow-keepers and dairymen. The health of the cattle has been uniformly satisfactory, though much yet remains to be done in the direction of keeping the animals clean during the winter months, when they are confined in the sheds.

No. of Registered Cow-keepers, Dairymen and				
Purveyors of Milk	...	...	...	58
Registered in 1899	...	...	...	10
Erased in 1899	...	...	...	17
No. of Inspections	...	...	...	223 ”

Caterham.—The Medical Officer of Health reports “much room for improvement” in many of the registered dairies and cow-sheds.

Frimley.—The Medical Officer of Health reports “Premises as under regular supervision.”

Hambledon.—No more definite information is given than that contained in the Report of the Medical Officer of Health, who writes as follows: “Cow-sheds and Dairies.—There are about 86 of these in the district; these are all in a fairly satisfactory condition. As far as I am able to ascertain, no means have been adopted of applying the tuberculosis test. In one of the largest sterilisation is carried out when practicable, and every precaution is adopted to prevent the spread of disease by means of milk.”

IX.—SEWAGE DISPOSAL.

In the Report for 1898, issued during the summer of 1899, a very full account is given of the Sewage Works in the County. In order to complete this category (which was drawn up with the co-operation of the Surveyors), it would be necessary to add accounts of the little Disposal Works for Ham and Merstham, together with those of the much larger works at Woking and Carshalton, which have come into operation in the year under notice. This exhaustive Report having so recently appeared, it would probably be considered unnecessary to again dwell on this part of sanitary administration. It may, however, be both useful and interesting to the Council, as well as the Local Sanitary Authorities of the County who are immediately concerned, to recapitulate certain points for information and consideration.

The total population of the County, including **Pollution** the 12,000 persons at public institutions, is **dealt with.** 499,000. During the past few years great progress has been made in dealing with the gigantic problem of "pollution" from this population, situated as it is. The population already drained to Sewage Works may be estimated approximately at 275,000. If the works in course of construction be taken into account it is nearly 300,000. The pollution of this part of the population is more or less effectually dealt with.

The remaining population consists of 200,000, **Pollution** or about two-fifths of the whole population of **remaining.** the County. This number, though it includes of course the residents of many estates or "self-contained places, is chiefly made up of the village population of Surrey.

From the fact that so large a part of the population has been already *provided for*, it might be supposed that by far the worst part of the difficulty was overcome. But unfortunately this is not so. The circumstances connected with the population as yet *unprovided for* represents an altogether disproportionate amount of trouble ahead. The most difficult part of the pollution problem and of the schemes for sewage disposal which have been exercising the minds of so many of late years, is that which relates to the small and scattered communities of the villages and residential country districts.

In some cases, village communities, such as those of Oxted, Cranleigh and Godstone, have decided that sewerage is the only practical solution of the problem, and that being inevitable, nothing remains but to see that it is carried out with all possible efficiency and economy.

It is hoped that in these cases the Bacterial Systems, as they are called (*i.e.* Septic Tank Systems. and Contact Bed Systems), may prove to be of real and substantial assistance by lessening the quantity of land required at the outfall, as well as by lightening expenses entailed in dealing with sludge.

Allowing for the rural populations provided for by sewerage systems already decided on, there still remains a considerable population living under conditions to which sewerage is very ill adapted. The most enthusiastic advocate of sewerage must admit that it has its limits of application, and that when

a scheme of this nature is proposed for groups of cottages a mile or so apart, Sanitary Authorities may well pause and consider the whole situation.

Separate Drainage. In all these schemes for sewage disposal, especially in connection with the Bacterial methods, the "separate system" is talked of.

The County Medical Officer of Health attends most of the Loan Inquiries, and has, therefore, had the opportunity of pressing for details as to this "separate system" from the authors of the schemes. These experts have not always been prepared with information beforehand on points which may on their own showing prove to be essential when their schemes come into practical operation. It is only reasonable to expect that engineers should be expected to explain fully what they mean when they say of this or that scheme, "it is to be on the separate system."

Effects on Public Health. In the special Report, which appeared last year, the County Medical Officer of Health dealt with the public health aspects of sewerage systems. Some of the principal considerations which Sanitary Authorities have to take into account, when they are contemplating their introduction, were also passed in review. The benefits to the public health which follow upon works of drainage are sufficiently described in the sections devoted to vital statistics and preventive measures. The sewerage systems of the County have undoubtedly contributed very materially (in the case of the towns especially) to securing the comparatively low County Death-rate of 13·7. It may be mentioned here that more than twenty years ago the County Medical Office

of Health had to inquire into the advantages or disadvantages of the "separate system" in part of a large manufacturing district, and that he then formed the opinion, which has been confirmed of late years by experience in the County, that to carry it out as completely as possible is beneficial to the public health as well as conducive to efficiency and safety of sewage disposal at outfall works.

The chief points that determine the choice of a scheme were entered upon in the Report referred to. Mr. Welch, the Chairman of the Sanitary Committee, from his place in the Council, added some further recommendations to District Councils suggested by his great practical knowledge. To his own remarks the County Medical Officer of Health desires to add a word as to "Effluent Drains." If a site be close to a river or stream there is no difficulty, the effluent drain being generally short and uncovered. But when, as at Byfleet and the area for Stoke-next-Guildford, places have been chosen partly because they are a good distance from a watercourse as well as being suitable in other ways, this question of Effluent Drains becomes of practical importance. These may be open channels constructed for the purpose, or they may be merely the ditches surrounding the land on which the sewage is treated. In such case they need not give rise to nuisance. But on the other hand they may have to be covered pipes or channels extending for several hundred yards, like sewers under ground. In such case they nearly always do give rise to nuisance. This is brought about by the growth of a noxious fungus—*Beggiatoa Alba*. Owing to the development of this fungus in the long dark channel of the covered pipe, the clear effluent becomes polluted and offensive at the point of discharge. The means of

preventing this nuisance has not yet been discovered. It is necessary therefore to bear in mind the desirability of avoiding long covered effluent drains.

Great stress was laid in last year's Report on the **Management** necessity of good management at sewage works. **of Works.** The County Medical Officer of Health desires to emphasize this once more. There are still cases where the interest of the managers is chiefly centred in farm operations and not on sewage disposal. Then again Sanitary Authorities who have spent tens of thousands on sewerage and sewage disposal works and plant, will sometimes be content to appoint "duffers" to manage them. An ordinary labourer may be a very worthy individual in a way, but if he has not the intelligence or practical knowledge to guide him in his work he will make a terrible mess of it. The aim and object of sewage works is to dispose of the sewage in an efficient, clean, and inoffensive manner. It is most disappointing, on visiting sewage works designed with care and at great cost, to find complete absence of proper supervision ; the tanks in a filthy state ; and no attention given to the distribution of the sewage over the land, with the result that it surcharges patches of land or gravitates into hollows, surface pollution escaping into water courses at different points.

The C.M.O.H. ventured to offer a few suggestive observations in his Report as to the **Loan** nature and scope of the **Inquiries.** the Local Government Board into applications for Loans and Provisional Orders, with a view to improvement. That such improvement is taking place is evident from the painstaking and exhaustive inquiries that have taken place recently as to schemes for sewerage. District Councils are

giving more attention to schemes in their inception, and they more often seek the advice of the best experts, which is the most economical plan in the end. It is, perhaps, needless to add that, as the C.M.O.H. attends any inquiry at which he thinks his presence will be useful, his knowledge of local government, and the policy of the Council, together with his experience of schemes of various kinds, when actually in operation, are freely at the service of the public.

Further light on this great problem is expected
The Royal when the Royal Commission now sitting con-
Commission. cludes its inquiries and issues its Report. It
 is most earnestly to be hoped that this will be
 sufficiently comprehensive, and that it will take into account
 the circumstances of little villages and scattered populations as
 well as those of towns.

X.—POSTSCRIPT.

The above pages were submitted to the Sanitary Committee in “rough proof” some few days before their meeting. A few amendments (chiefly in the form of expression) suggested by those who take a deep interest in the work have been introduced, and the Report is now ready for issue to the Council.

There is necessarily, in reports of this kind, a certain amount of repetition and reiteration of statements, opinions and advice.

It is probable that many improvements which have been brought about in the County, as elsewhere, are partly the result of oft-repeated official representations. Such reiterations, though tiresome to those who are familiar with the subject, are at the same time absolutely indispensable. Moreover, they assist members of the Council and others who are both able and willing to influence public opinion.

Annual Reports should be something more than mere chronicles of events. They ought to furnish the means of gauging the transient and permanent condition of a district from the standpoint of sanitation and the administration of the Public Health Acts. This was the intention when the duty of reporting annually was first made statutory. In these Reports it has always been my endeavour to carry out this intention as fairly as possible. It may be remembered that the Report for 1896, which dealt chiefly with water supply resources, was regarded as “optimistic” at the time. It may now be that to some who are concerned in local government the Report for 1899 may seem to err in an opposite direction. If there be those who incline to this view, I would beg to remind them of what has already been said on these annual

occasions about administration generally. All sides of the subject have been considered ; it presents many good and some bad points. Although I am convinced that, for the sake both of efficiency and economy, amendment is urgently required in the work of nuisances removal and cow-house supervision, I desire to say once more that other work which immediately concerns Medical Officers of Health in their several districts has greatly improved of late. Frequent references have been made in these reports to the excellent work which is being done outside the "United Districts Area"—for example, in the Croydon Rural and Godstone districts, and in that of Wimbledon. I may further venture to assert, in these closing words, that no small share in this marked improvement stands to the credit of the Authority whom I have now the honour of addressing. For it is certain that by exercising its discrimination in referring to the work of the Officers, whom it assists, the **Surrey County Council** is at the same time affording them and their colleagues the best encouragement to an intelligent and faithful discharge of duties which are every year becoming of more importance to the public.

E. C. S., *April* 16, 1900.



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